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COMPUTER WEEKLY

Staving off a 'jobs holocaust'

STATING that there is no one solution to the problems created by the free advancement of technology, particularly in its effects on the present-day work ethic, Clive Jenkins, head of the Association of Scientific, Technical and Managerials Staff, and Barrie Sherman, research director for ASTMS, have urged a "multi-dimensional approach" in our attempts to stave off a "jobs holocaust."

With the above statement, Jenkins and Sherman round off their book, The Collapse of Work*, which explores the potential demise of the work ethic and how society is (or is not) assimilating new technology.

One of its themes is that "industrialised societies will not, in the future, be able to provide work for all on a continuing basis."

But this need not be disastrous, they say; instead we will have the prospect of exploiting what they call "great opportunities," while against that will be the possibility of a "backward step towards a post-industrial dark age."

A deciding factor in all of this would of course be the types of decisions taken both nationally and globally, some of which may indeed "fly in the face of established political practice and need international courage and vision."

A topic well-known to the authors is that of the role of trade unions in society, and of this they say: "The new technological changes will, as we shall see, have to elicit a powerful, intellectual response from the trade union movement."

Also: "Well organised trade unions in any country hold the keys to the quality of life in that country and therefore have a great responsibility."

In the final chapter and analysis, Jenkins and Sherman suggest that "prevention is better than cure" and among the proposals to be found there is the setting up of the new public sector funds — one based on North Sea oil revenues, the other on pension fund capital. They also call for education and retraining schemes to be implemented to handle the fall-out of workers.

"It is impossible to over-dramatise the forthcoming crisis, as it potentially strikes a blow at the very core of industrialised societies — the work ethic," write the authors. "We have based our social structures on this ethic and now it would appear that it is to become redundant along with millions of other people. . . ."

*The Collapse of Work, by Clive Jenkins and Barry Sherman. £3.50. Published by Eyre Methuen.

NEWS IN BRIEF

Mirror halts new technology

DIFFICULTIES with the computer-driven page make-up system at the Daily Mirror have led its management to drop the development, for the time being, and revert to manual make-up by cutting and pasting.

The Linotype-Paul system using large storage CRT screens was taking much longer to assemble pages than traditional hot metal methods. This led to serious production delays.

Jail terms cut

TWO men who were jailed at the Old Bailey last year for a £275,000 blackmail attempt against ICI (CW, February 9, 1978) had their sentences reduced in the Court of Appeal last week. Rodney Cox, 28, a senior operator at ICI's Rotterdam site, and Peter Jenkins, 28, a freelance programmer, had their six- and five-year terms reduced to four and three years respectively.

PO micro trial

A TRIAL of automatic call recording equipment beginning this Saturday in Eastbourne, brings microprocessors into the telephone network for the first time in the UK, and possibly in the world, according to a Post Office spokesman. If successful, the ACRE equipment will be installed throughout the network from 1981, eliminating the need for telephone operators to write a ticket for each call connected manually.

Itel Corp acts to avert leasing crisis

DRASTIC steps are being taken at Itel Corp to secure its future following the body-blow to its leasing business from the IBM 4300, and worse than expected sales for the AS line of IBM-compatible CPUs.

The company is understood to have made a major transaction with a private finance company involving sale of the residual values of computers and transport assets on lease.

The company's problems have surfaced because it has been in process of issuing two million units of preferred stock. Late last week it cancelled the offering.

In the preliminary prospectus for the stock Itel reveals a first quarter loss on computer sales and leasing of $4.4 million, which is a turnround of almost $10 million compared with the $6.3 million profit it made in the 1978 first quarter.

Itel also says that its aggregate claims under the Lloyds "J" policy with which residual values of leased computers were insured are expected to exceed $100 million.

Itel has struck a complex financial deal with Hillman of Pittsburgh, under which it has paid Hillman $12.5 million in what is called a "put" option. This is on the residual values of all Itel's leased equipment, including $48 million of computers and about the same value of ships, containers and railway trucks.

The option means that Hillman has agreed to buy these residuals at their book value if Itel asks them to, and has been paid $12.5 million for agreeing to do so. However no money has changed hands. Instead, the assets have been put into a new subsidiary, valued at $12.5 million, run by Itel-but owned by Hillman, which will actually liquidate the assets.

It appears that Itel concluded the deal because its accountants wanted it to reduce the book value of the computers to a more realistic figure. The deal was possible because many of the transportation assets were on Itel's books at well below their current value.

Under US Securities and Exchange Commission rules, Itel cannot make any comment other than what is in the prospectus. However, an amendment to the prospectus states that first-half results will be substantially down and that the computer sales force has been reduced. The reduction is understood to be at least 30%, thought to be about 100 people.

Observers say that Itel has been paying National Semiconductor $350,000 for AS/3-5 processors, making it very difficult to sell profitably against the 4341.

When announced (CW, March 1), the 3-5 was offered at $600,000 including two Megabytes of memory, against $245,000 for a two Megabyte 4341.

Itel's retrenchment has also included a complete withdrawal from the minicomputer marketing business, including cancellation of plans to sell the Data General C5 line of business systems.

Things look brighter for Itel in the second half of the year, when OEM prices for National Semiconductor and Hitachi CPUs come up for renegotiation.

Go-ahead for NEB's £8m disc investment

LEGAL obstacles in the way of the National Enterprise Board's plan to invest £8 million in a disc drive plant to be set up jointly by Data Recording Instrument and CDC subsidiary, Magnetic Peripherals Inc, have been overcome and the project will now go ahead with the blessing of Industry Minister Sir Keith Joseph (CW, May 24).

The Minister has also approved the outlay of about £1 million more to buy out the 13% minority shareholding of Grundy of Teddington, which had objected to the venture. Grundy has now sought leave to withdraw its suit from the Appeal Court.

The new company will be 76% owned by DRI and 24% by MPI.

Strikers cause £350m phone bills backlog

NOW into its eighth week, the strike by Post Office computer and clerical staff has created a phone billing backlog of about £350 million and shut down all main System X development centres (CW, May 17).

It has been revealed that among special conditions attached to an unofficial corporation proposal to restructure all grades, are the introduction of contract and part-time DP staff within the Data Processing Service and the acceptance of word processing equipment into the corporation.

A spokesman for the Society of Civil and Public Servants said, "The Post Office has made at least two large loans that we know of. One example of how the dispute is affecting its cash flow is that one area that would normally take in £28 million in about seven weeks has only received about £104,000."

● Engineers at two GEC Coventry works voted last week to cut their overall pay claim from 23% to 15% and to support financially 67 commissioning engineers who have been suspended by the company for not working normally (CW, May 17). The engineers, apart from the 67 suspended, have also agreed to return to normal working pending settlement.

GA chief toppled—but stays as a director

THE founder, chairman and president of General Automation, Larry Goshorn, has been toppled in a palace revolution, and a professional computer company "doctor" has been brought in as president and chief executive. Goshorn stays on as director of the Anaheim, California-based minimaker, and it is not relinquishing control of the company without a fight.

As half-time figures of $1 million net profit on $53 million turnover for the six months to January 27 indicate, the company is in no immediate trouble but the board hopes by the reorganisation to achieve faster growth and improve profitability.

New man at the top is Frank Grisanti, whose management consultancy, Grisanti and Co of Los Angeles, specialises in improving the performance of computer companies.

Grisanti described Larry Goshorn as a "technical genius".

Goshorn in turn described Grisanti and Galif as "great people", but claims that he is still legally chairman and president.

Other changes announced are two additional board members, lawyer Dennis Nystrom who becomes General Counsel, and Irwin Kwatek, an existing GA executive. John Conlon, who joined the board in 1975, becomes chairman.

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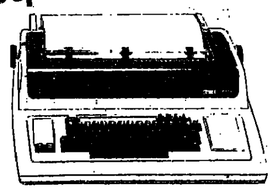

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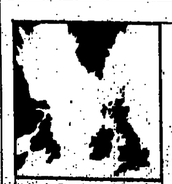

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Briefing

Magnuson raises $10m

IBM-COMPATIBLE processor manufacturer, Magnuson Computers has raised nearly $10 million of working capital for expanding its production and marketing operations, disproving the doubts about its capital raising ability expressed by New York stockbrokers, Paine Webber Mitchell Hutchins (CW, May 10).

Magnuson's M80 family of IBM 4300 compatible machines should be available in Europe by the end of the year. The working capital was raised from a number of sources in return for a total of 23% of Magnuson shares.

Bow Group on NEB

THE National Enterprise Board should be merged with the British National Oil Corporation in order to help finance strategic new industries with North Sea oil revenue, according to the Tory Bow Group. In a paper, the Bow Group asserts that the NEB should carry on subsidising ventures such as Inmos, but should lose to other bodies its functions of supporting lame ducks and promoting exports and regional development.

Faster discs

TWO new low-cost fixed discs for Data General Nova and Eclipse minis, and the Micronova computer-on-a-chip, feature microprocessor-controlled "seek" mechanisms for increased speed, and Winchester technology. The units hold 12.5 Megabytes and cost around £3,300.

Bank shifts

SEVEN-DAY working has been agreed to by Barclays Bank computer staff following a recent ballot. The agreement will mean that staff will work between 35.5 to 35 hours a week and receive a shift allowance of 45% of salary — providing this falls between minimum and maximum annual payments of £1,131 and £2,868.

Off to the club

BECAUSE of the shortage of space at ICL's Slough offices, 11 marketing department staff are to be moved to the Stoke County Club, Stoke Poges, for up to six months while the company attempts to find new office space in Slough. According to the company, "all the staff are very pleased with the arrangement for the move, which are the normal terms offered in such a case."

Two deals off

ACQUISITION talks with Thorn and Gould have been broken off by the Florida-based mini manufacturer, Modcomp, and the company now intends to remain independent. In another take-over scheme, Bunker Ramo has rejected the bid of 20% shareholder Fairchild Industries, for a full merger.

Crowds queue in the rain for the NCC

UMBRELLA sellers did a brisk business as thousands of showgoers lined up in persistent rain to register for the National Computer Conference at New York's Coliseum this week. Among the main attractions of this show were the enhanced Honeywell page processing system, the PPS 2, which incorporates the powerful 66/43 minicomputer, and Prime's 1 Mbyte memory board for its minis. This is made of 64K bit chips.

For Dataproducts the acquisition of Plessey Inc, the UK group's printer division (page 2), gave the company entry to the daisy wheel market and in New York Dataproducts launched a 50 chps daisy wheel printer developed by Plessey.

TIM PALMER reports from New York

The innovative bit slice Univac 1100/80 (CW, May 17), was formally announced on Tuesday in New York and yesterday, Wednesday, in London. Prices range from $319,000 for a 512K word single processor to $1,442,000 for a 1 Megaword dual processor.

As exclusively reported in Computer Weekly (CW, April 19), Burroughs has adopted the Xerox 9700 high speed page printing system after evaluating Siemens' ND2 laser printer. It was announced at the NCC as the B9270-35, Incorporating a Digital Equipment PDP/11 it runs at up to 18,000 lpm.

Neatly leapfrogging the 32-bit mini makers, Harris has added a new S/800 48-bit line. There are two models, the 850 and the 870 which run the well-established Vulcan operating system.

Paradyne has added a new product, Pixnet, to its Pix II communications system for IBM mainframes. The Pix concept is to add communications without installing communications software on the IBM host, and Pixnet extends this by supporting multiple hosts and allowing interactive terminals to connect to multiple applications programs thoughout the network. It will be marketed in the UK by EMI Technology.

Wang's bid for office market

THE fiercest challenge from any manufacturer to IBM's plans for the electronic office market was announced by Wang at the NCC in New York on Monday. The equipment introduced includes an IBM-compatible electronic mail facility; the integration of word and data processing on both of Wang's main ranges, the VS mainframes and the OIS word processors; and a new 370/158 class VS model.

This last machine, the VS-100, is a 32-bit processor with 64-bit highway, costing $93,000 for a 1 Megabyte system, compared with $245,000 for a 1 Mbyte 4341 from IBM.

Fortran and PL/I will be available next year for both models in the VS line in addition to the existing Cobol, Basic and RPG II.

A new database system combining both features of network and relational databases has also been added for the VS systems.

Key communications features are the announcement of 2780, 3780 and 3270 protocols for both the OIS and VS lines; these protocols are also supported by the Mailway electronic mail controller enabling both text and data messages to be transmitted between OIS word processors and VS computers, and to IBM mainframes.

Integrated Information Systems, IIS, are achieved by Wang in two ways. The company's word processing workstations store almost all the required functions locally, and are now attachable to VS and VS-100 systems in any mix of word and data processing stations.

At the same time Basic has been added to the OIS line of word processors, enabling users to add data processing applications. All VS and almost all word processing users can add all these facilities to their existing systems.

Other introductions from Wang were two new OIS models, the low cost 125 and the top end 145, and a dual daisy wheel printer for users wanting to combine type founts.

Other introductions from Wang were two new OIS models, the low cost 125 and the top end 145 and a dual daisy wheel printer for users wanting to combine type founts.

ICL clarifies stance on open systems networks

ICL re-affirmed its long-term commitment to open systems networking based on international communications standards at the 2900 Club meeting last week. At the same time it made clear that its short-term strategy was the development of the Cream family of microprocessor based protocol converters, first revealed at the CUA meeting last month (CW, April 26).

"It could well be 10 years before firm international standards appear for open networking," noted Jack Houldsworth of the company's Letchworth development centre, "and we cannot wait. In common with other manufacturers, we will have to address the most common communication needs in the interim."

ICL, he argued, was well placed to implement facilities along with the emerging standards, being closely involved with standards activity.

It would also benefit from its "onion skin" communications architecture, which would permit it to replace levels with each standard as it appeared.

ICL has not as yet announced a networking architecture along the lines of IBM's SNA or Burroughs' BNA and its present stance is seen by users as a continuing policy of "one-off" communications specials.

A network architecture has, however, been expected for some time and may be announced in November, according to one source.

Users are also still waiting for the Integrated Communications Executive (ICE) for the popular 2903/4 systems. Thought to support extensive interconnection of 2903s and 2904s, ICE is believed to be under test release at a few UK sites and may be released later this year.

The 2900 Club meeting addressed itself to the topic of communications excellence, and focused chiefly on the communications facilities of VME/B.

Full report page 7.

INSIDE THIS WEEK'S CW...

THE 2900 SCENE

ICL 2900 users met in London last week to discuss the successes and problems of their systems, and to hear about developments from ICL representatives. This week Software File is devoted to reporting the proceedings. Page 7

A BASIC FLUTTER

So the Derby is over for another year, but for the committed punter that is just another race and the opportunities for winning open up with every new racing day. Professor Frank George, who has already produced a guide for pools addicts, now turns his hand to the Sport of Kings. Page 4

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Racal plans Ferranti bid if NEB is trimmed

RACAL will be making a strong bid for Ferranti if the government goes ahead with its declared intention of cutting back on National Enterprise Board activities. Confirming this, Racal chairman Ernest Harrison said his group would not be interested in acquiring any of the projects started by the NEB, such as Inmos, Insac and Nexos.

In his view the board should not have become involved in establishing new companies, but there would continue to be a need for the NEB, or some similar government-supported body, to manage the industries which would not go back to the private sector.

Harrison said any break-up of the NEB had to be done with care to ensure that the good management that the board had should be kept to handle the unsaleable companies. Harrison was not blind to the benefits to be gained from some government aid.

Giving his annual review of Racal's progress, Harrison said that the company had just received a £1.4 million order from the Post Office for Racal-Milgo MPS 48 modems. These were for use on the new Datel 4832 service, and it was the first time that a major order had been placed by the PO for proprietary datacomms.

Outlining the group's performance, Harrison said it had been the greatest year in the group's history, with sales up to the end of March reckoned at £225 million showing a pre-tax profit of £60 million.

First personal system from Texas

The all-out attack on the personal computer business expected from Texas Instruments came last week at the Chicago Consumer Electronics Show, but it has already been labelled as disappointing. However, it will be one of the first 16-bit home computers to reach the market.

Instead of the expected three pronged entry (CW, April 12) Texas has introduced the 99/4 that is aimed specifically at the domestic and consumer market.

Based on the Texas 9900 chip, the system is a keyboard-based unit with separate 13 inch, NTSC standard colour display. In the UK, the system will cost £645 excluding the display. The all-in US price is $1,150.

The system has a non-expandable 16K byte user memory, backed by 26K bytes of operating system and TI extended Basic software in ROM.

The 99/4 will be available in the US sometime towards the end of the year, and should be available in this country a little later.

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COMPUTERVIEW

Not so much a chuckle, more a groan

THE letter about computers that was written to a provincial newspaper, quoted by Chad on page 4, may provoke plenty of chuckles, but it should also call for a good deal of disquiet. It reveals in the mind of the writer a set of ideas about computers that are so divorced from reality as to indicate a fundamental failure on the part of the media to impart any genuine understanding of the subject, to this individual at least.

It is clear that the writer has spent many hours watching television programmes on science and technology, and these programmes certainly purported to be bringing the viewers Truth, to be education rather than entertainment. Yet it is also clear that this person has totally missed the point of many of the scientific matters that were presented.

In the past Computer Weekly has printed many examples of the fantastic things lay people say about computers, usually displaying either blind fear or an absurdly inflated idea of what the machines are capable of doing. Much of the blame for this state of affairs must rest with the Press and broadcasting services, whose job it is to bring new ideas to those of the public who have left school.

The difficulty, however, is not that writers and television producers are unconscious of the problem. They spend countless hours arguing, discussing, theorising about how to bring over science to the general public. At the end of the day, though, when the pencil stubs are chewed to nothing and the ashtrays are overflowing, they still come up with the wrong answers. In television in particular, those involved will often admit that they end up choosing a scheme that makes "good television" rather than good Truth.

It is the obsession with trying to be entertaining, with trying to stop viewers from switching to the other channel, that distracts many a producer from getting the fundamental ideas across. This problem of how to make an impact, regardless of the subject matter, afflicts everyone who works in the media, but they often fail to see when the subject matter itself can be entertaining, if treated with patience, and if the reader/viewer is credited with a modicum of intelligence.

Two recent BBC programmes illustrate this — the first was on Einstein and the second on Time. Both failed abysmally to get across any rational understanding of the ideas involved (which were of course very profound). Both employed well-known comic actors to walk around muttering "amazing . . . fantastic . . . the mind boggles . . ." as "gee-whiz data" was fed to them by scientists who might have known better. And when all the gee-whiz was over, the viewer, whether well or poorly educated, was little the wiser.

The Lancashire Telegraph letter gives an interesting insight into how misguided ideas can be acquired. Clearly the idea about "energy radiations" being picked up from rooms or beds where people have been comes from a programme on infra-red cameras. The programme failed, however, to get across the basic point that the camera is registering the residual warmth left by the person, which of course fades away in a short while.

The point has been made that the sum total of ignorance in the world is steadily increasing, as technological change outstrips the capacity of individuals to assimilate information. The implications of this for democracy are very serious, however. As society gets more and more technically oriented it is vital that the electorate be able to judge soundly the pronouncements of politicians, to prevent technological wool being pulled over its eyes.

In the shorter term, consumers need to be able to rebuff the ever-persistent excuses of "The computer made a mistake," or "We can't do that because of the computer," or "You have to do it this way because . . ."

Thankfully the practical experience of computing which many thousands of schoolchildren are now getting will enable the next generation to deal with these problems much more effectively. In the meantime, however, the media must make a concerted effort to enlighten the public — to strip away mysteries rather than pile them on.

FOCUS

Prescription for DP health

ACCORDING to reports, the Institute of Data Processing Management has established a monthly surgery for members of its new microcomputer users' club. Once again it seems that the micro chip movement has caught the industry with its databases well and truly down.

But before the rest of us insist on equal rights and opportunities for mainframe equipment, some basic reappraisal of the scheme would seem desirable. While it may well be feasible to take a Pet or Cherry to the surgery for consultation, larger species of computer would not be so welcome. This is, for a start, a strong handicap for mainframe users.

Also, the level of surgery available has yet to be revealed. Whereas a couple of scopes and a micro-sized soldering iron could sort out micro level ailments, more radical treatment could well be outside the competence of the organisations.

It would seem that for mainframe users, a similar project would be limited to that of an advisory service. Even so, surgeries could be expected to be crowded with worried, troubled and tense computing personnel. It may well be necessary, therefore, to establish separate clinics to cater for the needs of the various groups.

First in the advice centre (by installation custom) would be the operating team, complaining of a severe dose of spiking. Recommended remedy would be full-scale quarantine of all electric equipment in and around the site.

Next in line would be the programming team, suffering from coding spots before the eyes. Treatment would include complete isolation from VDU screens for three months.

Also present would be the analysts, complaining that they are misunderstood not only by their colleagues but by all the user departments. Confidence-boosting pills would be issued, plus some urgent patching of sensitive feathers.

Predictably also in the surgery queue would be end user management — their problem being a severe case of frustration. New applications are implemented several months behind schedule while existing jobs seldom come up to expectations. Remedy would be to spend a full working day with the DPM. Further complaints would be tinged with understanding.

Notably first in the surgery would be the DPM himself. His symptons indicate a bad case of battle fatigue. The prescription will include establishing a firm structure of priorities and delegation, plus the recommendation to seek a smoother life as a DPM in a State-run installation.

Of course, it could be that the IDPM has it in mind to set up a mobile consultancy station, ready to rush to the dire needs of any installation in distress. If so, the unit can be assured of a busy schedule. Most DP managers would willingly pay the annual subscription for such an emergency service. The thought that a top-level team of advisors, plus perhaps skilled engineers could be rapidly summoned, would be of great comfort.

Unfortunately it seems that initially at least, the IDPM scheme, is limited to micro surgeries with a phone-in facility later in the summer. Particular emphasis is being given to first-time business users, who are probably most in need of sound, practical and hopefully rewarding advice.

The whole concept would seem to warrant some industry reward of its own for enterprise and originality. But it must be hoped that the organisers haven't overlooked one vital factor. To establish a professional computing surgery, there should be adequate stocks on hand of old issues of Computer Weekly.

1984 and all that...

A PRIZE of £5 is awarded for each contribution from a reader to our column of the strange things people say in the media about computers.

"It's so hard to weigh up the pros and cons [over the European election]," said a cheerful woman in the car park. "We are as poor as crows in Trowbridge. We want all the information we can get." Her husband had been deeply impressed with Mr Heath, "A marvellous speaker, just like a computer," he said admiringly.

The Guardian

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A mini-computer system is required to replace and enhance the existing computer systems used by the Forestry Commission to analyse data from experimental, surveys and other observations which contribute to problem solving in the areas of forest management and harvesting.

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Ten years ago...

COMPUTER WEEKLY JUNE 5, 1969

Because of delays and uncertainty about ICL's [illegible] operating system, the Ministry of Agriculture went ahead with its work for the year without it . . . Two bureaux, CRC (now the UK arm of GSI) and Atlas Epsom (now part of Online Systems) started operations with SDS Sigma 5s . . . The Sigma 5 described as representing a third generation of [illegible] machines, was announced in Russia . . . The first Plessey Mark 1 8280 plated wire memory was delivered to the Foreign Office communications system. It had a 100,000 word capacity and was for use with an ICL 1906A ordered for the Government Communications HQ at Cheltenham.

Dataproducts acquires new printer

A DAISYWHEEL printer introduced almost unnoticed in the US last year by Plessey's West Coast subsidiary Plessey Peripheral Systems Inc. has been acquired by Dataproducts. The big OEM line printer specialist of Woodland Hills, California, has bought the [illegible] printer division for an undisclosed sum.

The AlphaGrid printer is a 144 chps daisywheel device with 132-column format. The plant in Irvine, California employs 85 people making printers a month.

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CAP-CPP cashes in on MicroCobol

CAP-CPP is beginning to reap the benefit of its substantial investment in MicroCobol, having now achieved some 50 installations and licensed the software to 20 OEM vendors. At the same time it has announced its first MicroCobol application packages in the form of purchase, nominal, and sales ledger systems.

Rapid progress has also been made by CAP on implementing the system for new machines, with 13 hardware types now supported. These include the IBM Series 1, DEC PDP-11, Transdata CX400, Sord 223, Triton 3, Zentek ZMS 70, ADDS System 70, and Mostek SYS-80F.

However, no implementations are planned for the current generation of personal computers, such as the Apple or Pet, partly because of main memory and storage restrictions.

A more important reason is that such systems fall outside the carefully-defined market sector currently being addressed by CAP, namely the "explosive" demand for low-cost microprocessor-based systems from first-time commercial users.

That it is aiming at this sector is emphasised by the substantial difference in cost between MicroCobol products and typical "personal" software.

The application packages, for example, each cost around £1,000 while the Business Operating System (BOS) — a prerequisite for any MicroCobol system — is priced at £450.

Although only needed by vendors and sophisticated end-users, the MicroCobol development system — including the compiler, linker, librarian, and editor — is priced at £2,000, while two further facilities, the AutoClerk file maintenance and reporting package and the Autoindex database and inquiry package, are priced at £1,000 and £300 respectively.

Of the 50 MicroCobol sales so far, about half have been made directly by CAP and the rest by the licensed distributors. However, with further licensing agreements being signed at around one per week, this sector should rapidly overtake.

Problems of policing society

THE problems of policing society in the 1980s will be made more difficult by the speed at which technological change is outstripping people's ability to adapt to the new circumstances.

Speaking at a meeting of chief police officers and local authority representatives last week, Arthur Burrows, director of the Police Scientific Development Branch at the Home Office, based this prediction on the premise and question: "As all our material needs will eventually be met by only 10% of the potential workforce, what will the other 90% be doing?"

However, technology itself could provide much of the answer to this problem said Burrows. "In the 1980s, all the devices required by the police could be made available."

One device that could see a far quicker application in police investigative work is a micro-based Photo-Fit system (CW, November 30, 1978) which uses computer-aided design techniques to construct and modify the facial characteristics of suspects based on information from witnesses.

Software for the system has been completed by the Computer Aided Design centre in Cambridge in conjunction with advice from Aberdeen University's psychology department.

"We are now working on the system so that it will be completely portable and therefore enable police officers to use it in the home of a witness." The present idea is that it will plug into any domestic television much like a TV game and the screen will provide the display.

Japanese aim at lead in decade

HAVING just about caught up with the US on computer technology by taking Honeywell licences and by copying IBM, the Japanese are planning to streak ahead when the fifth generation of mainframes arrives at the end of the 1980s.

MITI, the Japanese Ministry of International Trade and Industry, has formed a Fifth Generation Computer Survey and Research Committee which will lay plans for the generation of computers to follow IBM's H-series.

The committee is sitting under the chairmanship of Prof Tatsu-Motooka at the University of Tokyo, and has already decided that for Japan, very large-scale integrated circuitry is in, but Josephson Junctions, the super-cooled logic circuits about which IBM has released considerable research material, are probably out.

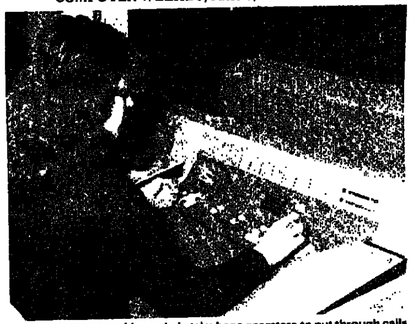
Also out is Von Neumann architecture, the architecture which is the basis of almost all today's computers. Pattern recognition and imitation of the operation of the human brain will be closely studied.

The idea is to break away from the traditional approach of designing the hardware and then mapping the software onto it; instead the committee wants to design the software and general system operation, and then try and fit a hardware design to it.

Prof Toshiyasu Kunii, also of Tokyo University, is the originator of the design approach, and is presently in the US studying future computer strategies at the University of Texas and with the National Aeronautics and Space Administration.

The committee is also to predict the likely socio-economic changes over the next decade which will determine the kinds of computers which are needed in the 1990s.

The committee is due to report in March 1981, after which an eight-year concerted national effort involving all the surviving manufacturers and public sector bodies will put the development plan into effect.



Microprocessors could soon help telephone operators to put through calls, if trials at Eastbourne of the equipment shown here proves successful. One of the features of the new switchboard used is an electronic display which details the call being handled.

Keeping tabs on calls

THE field trials of ACRE, the Post Office's new Automatic Call Recording Equipment, which started last weekend (CW, May 31), could ultimately save the corporation millions of pounds, according to spokesmen.

The system, which so far has taken four years and £2 million to develop, replaces the ticket-writing function of the telephone operators, required to log the details of calls needed for billing, with a micro-based magnetic storage system.

The system has a built-in clock for timing calls.

Six Eastbourne exchanges serving 60,000 customers are involved in the trials.

VLSI silicon devices seen as 'black hole'

A GRAPHIC description of very large scale integration by silicon devices as a technological "black hole" with an ever expanding event horizon was given this week at the Motorola Microforum by Colin Crook, managing director of Rank Precision Industries.

Giving the keynote address as forum chairman, he said that silicon technology continued to absorb more and more of the systems business with time. "Every year, significant portions of the sub-system, and ultimately system, pass over the event horizon and fall irreversibly onto the silicon," he said.

With the advent of 1 million and 10 million transistor chips, silicon achieved control. "Then the question is whether the UK gets involved with silicon processing or buys from the US and Japan."

He went on to reiterate the point made in Philadelphia by Gordon Moore of Intel (CW, February 22) that the major problem was defining what actually to make with the technology.

"The silicon black hole now begins to warp the very nature of the market and end user," he said. "At this level of integration, no one escapes."

He therefore felt it inevitable that a true silicon systems country would need the technology at some level of VLSI capability.

CRT division sale

THE division of Ferranti that designs and manufactures the cathode ray tubes for the company's video terminals, the Special Components Department, has been sold to Thorn Electrical Industries. Though no price has been quoted for the sale, the Department is understood to have turned over some £2 million last year. It will be joining Thorn Brimar, and together they are expected to realise a £10 million company.

CMC for Mond

TO prepare data for its commercial applications, the Mond division of ICI has ordered two CMC Sovereign key-to-disc systems for installation at its Northwich, Cheshire, headquarters. Worth £98,000, the equipment comprises 20 keystations, four processing terminals and a line printer.

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Downtime

by Chad

Calling all doctors, dentists and acupuncturists...

"AS others see us" is one of the themes of our "1984" column; we are continually coming across touching examples in the local Press of how ordinary people view computers. It is seldom one finds a piece so elegant, so all-embracing, so satisfying, as this letter from the Lancashire Evening Telegraph.

I was interested in the feature on "Tomorrow's World" showing how lettuce was grown by computer.

Could we not therefore have a computer for humans telling us everything about our bodies, the blood, urine, and acupuncture meridians.

The energy given off by each organ in our body has a certain gyration and oscillation in health and any deficiency would show up telling us what disease each organ may be suffering from.

Each disease within our body also gives off its own gyration and oscillation, and we could tell immediately which germ may be present within our body which could save a lot of lab tests.

I am sure someone in Blackburn builds computers, and all doctors, dentists, acupuncturists, etc should get together with their knowledge. It takes all kinds of medical knowledge to get the full range of requirements.

The air in Blackburn shops and operating theatres could be tested continually, which would reveal any dangerous chemicals or germs.

People may not think it necessary to have these computers in big stores or doctors' surgeries, but just think what a help it would be to the NHS and to every person. I think every person should know more about their body.

The computer could give a written report for people to take to their doctors if anything became abnormal.

A lot of lives could be saved and what could be tested at death or in the grave is beyond our imagination. The going on in the grave or at cremation should be tested then perhaps we would see the church's teaching brought to life and the doubts about death gone for ever.

We only need to think of what the computer revealed in the shroud of Jesus and the Mev (millions of electric volts — energy) with which He rose from the human body in spirit.

Our wavelengths are still connected to our loved ones and we CAN connect up to them after death, and I am sure the computer could do so ...

What about it Blackburn? It is a money-making product and the more made for stores, doctors' surgeries, etc the cheaper it will be.

Last year's Derby winner, Shirley Heights, pips Hawaiian Sound at the post in the 199th run of the classic. Will Professor George (see below) clean up on the bi-centennial?

The gentle art of Basic fluttering

ABOUT a year ago I wrote a computer program for football pools forecasting. This was the third I had written, but the first that worked well. Now I have turned my hand to horse-racing programs for the computer, and have already written four in both Algol and Basic.

The fundamental idea is that gambling programs have at least something in common, and this is their concern with uncertainty. This in turn suggests probability and statistical methods.

There are at least two jobs to be done, firstly to collect and sort the vast amount of data available on horse racing all over the world. This data then requires treatment by the standard methods of statistical analysis, such as standard error and the mean, difference between means, correlations, chi-squared, analysis of variance, factor analysis and so on in a whole mass of variations.

The second job is actually to forecast the result of horse races in the light of the rules or hypotheses we have constructed in the light of the selected data.

Why leave the choice of shirt-bearer to the tipsters at the back of your daily newspaper? Prof Frank George has devised ways of making the formbook yield its secrets in Basic and Algol.

Let me indicate the sort of hypothesis we are checking out by these means. The following is a typical example.

We eliminate from consideration: (1) All horses for which we have no data, e.g. have never run before; (2) All horses that have gone up one class (or especially more than one class) for the *first* time; (3) All horses that have been placed neither in their last two races nor in 50% of their races; (4) If you are betting to win, the horse must be in the first three in the betting and the odds must not be less than 6-4 against; (5) If you are betting each way, the horse must be at least 4-1 against and no more than 12-1 against; (6) The horses involved should be in the first three in the speed figures (SFs) and also in what are called weight adjusted ratings (WARs); (7) The going (state of the ground) must be right for the horse.

We are not presenting an exhaustive list, but only the bulk of the core factors.

Furthermore, the factors can be treated in two different ways. The first is the use of yes/no questions and suggests decision tables, and the more recent form of decision tables called Testrolog programs.

The second way is to use weightings which are on a numerical scale. This last method can also be used with a calculator.

The great advantage of the computer in this field lies not only in processing speed for the forecasting, but even more in the statistical analysis which is a necessary precursor to the application of the various forecasting systems and perhaps just as vital, the updating of the records in a database which is essentially adaptive.

This allows the computer to inform the user of a change in probability which necessitates a change be made in the system. An example would be the possibility (in the light of race and accumulating evidence) that in rule 5, the upper limit should be 10-1 against rather than 12-1.

A second example might involve the separating of winners from each way bets by dividing point 6 above into two groups. Winners should be the first two of SFs and WARs and each way bets should be in the first four of SFs and WARs. The possibility of "fine tuning" the system adaptively is evidence.

Two programs have so far been written for each and all two in Algol and two in Basic, and all have been operated on ICL 1903A. Versions have also been run on minicomputers.

The following example of a Basic program shows the tactics involved for the numerical weighting of the horses in which, for simplicity, we show only 4, with the improbable names of trees — OAK, ASH, ELM and BEECH. There is a set of numerical characteristics attached to each, representing our list 1-7 above, and some more besides.

We can then add up the number characteristics for each horse and list the totals in order. Here is the sample.

```
10 DIM X(4,10),S(4)
20 REM SYSTEMS LOOP
30 FOR A = 1 TO 4
40 PRINT "ENTER NUMERICAL
   CHARACTERISTICS"
50 REM LOOP
60 FOR E = 1 TO 10
70 INPUT X(A,E)
80 NEXT E
90 NEXT A
100 FOR A=1 TO 4
110 LET S(A) = 0
120 FOR E=1 TO 10
130 S(A)=S(A)+X(A,E)
140 NEXT E
150 NEXT A
160 PRINT "OAK";S(1);
   S(2); "ELM"; S(3);
   S(4)
170 END
```

When all the horses listed for any one race, check until an hour or so race, check the ... could not do that ... overweight carried ... offered.

This then determines ... ture of my actual ... the race we place ... position of each ... finish into the data ... forecast function ... lose the race ... then recover it ... future.

Row brewing over Mirror technology

BITTER rows are in danger of blowing up between Linotype Paul and its customers in several countries as difficulties persist with the operation of computer-driven newspaper page makeup systems, such as that at the Daily Mirror (CW, May 31).

Firms in other countries are reported to be unhappy with their Pageview systems, and are blaming Linotype Paul's software.

Recently, Percy Roberts, chief executive of Mirror Group Newspapers, announced the group was giving up attempts to assemble pages on screens and was reverting to manual paste-up of photocomposer output, pending resolution of difficulties that were causing "serious delays" in production.

Mirror staff feel that while the equipment can produce simple, "slabby" pages it is inadequate to handle the Mirror's elaborate eye-catching layout. The machinery takes a very long time to produce such output, but the human operation is also slow.

There are also functional flaws, they claim. For instance, the storage screens can only display six different type founts, and these have to be used to represent all the other printing founts that are used for headlines.

It sometimes happens that a finished page can look perfectly all right on the screen but when produced on paper, lines of type are found to be overlapping.

A Linotype spokesman claimed however that both the hardware and the software were perfectly adequate, and the problems were caused by the paper's management policies and incorrect operation. Mirror staff had not been adequately trained, he said. "Our equipment works," he asserted. "We have over 200 installations."

A joint working party has been set up by the Mirror and Linotype to try to find solutions. The Linotype spokesman expressed confidence that the page makeup system would be working satisfactorily within three months.

The Mirror's management have partly been waiting for Linotype to come up with answers, and partly been trying to improve matters by on-the-spot modifications to software.

Being at the "point of need" they have in some ways found this easier to do than Linotype would have, but they cannot deviate too far from the basic software for fear that the next version will then not fit.

Tape is cut at Memorex HQ

THE new headquarters of Memorex UK was formally opened in Staines last week at a ceremony which was attended by local dignitaries and businessmen. Memorex House, in Church Street, Staines, includes a large warehouse for imports.

Managing director of Memorex UK, Mike Kitching, explained that after the acquisition of Telex in 1978, the company needed substantial regrouping, and the move will bring together all the company's functions, including sales, repairs, training and administration, so that Memorex House would be the "nerve centre of all Memorex UK operations."

Memorex has branch offices in Bradford, Edinburgh, London, Manchester and Nuneaton.

Scicon's SW office

SCICON has opened offices in Weymouth at 43 St Mary's Street, to handle business in the South West, especially local Ministry of Defence work.

APT language

A SUBSET of the numerical control language APT has been implemented for the GEC 4000 series. Called APT 4000, the software was developed jointly by the Rugby computer centre of GEC Machines and NEL at East Kilbride and is now being used for production work at Rugby.

Honeywell names new support boss

HONEYWELL Information Systems has appointed Kevin Kennedy a director of the customer services division. He will report to Brian Long, who is managing director of Honeywell Information Systems and will have overall responsibility for the company's field engineering and support activities.

Kennedy joined Honeywell in 1964, and since then has held the positions of field engineering branch manager and northern regional marketing support manager. In 1975 he was appointed the first manager of the Honeywell branch which serves the Littlewoods organisation.

Most recently he was northern regional director of the data processing division. He will be based in Brentford.

BCS issues guidelines for teaching schools DP

IN an effort to alleviate the failure of many school computing syllabuses to keep pace with changing technology, a working party of the BCS Schools Committee has produced a pamphlet for teachers listing the basic topics that it feels should be incorporated as a priority in all school curricula.

The working party was concerned, according to chairman David Tinsley who is computing inspector for Birmingham schools, that teachers now with their limited experience were not equipping their pupils properly to deal with the very different technological world of the 1980s. Thus the topics chosen were fundamental ones, by and large independent of technical factors.

Among the topics listed are: the concept of input-process-output; automatic control of processes; the use of software packages; information storage and retrieval; the cashless society; computers and people; communications systems; and, computers in the economy.

Also mentioned is "Computer manipulation of text, number, picture, and spoken word". This deals with teletext and viewdata, office systems, and CAD. Artificial intelligence is also listed as a topic, as is the effect of computers on employment.

Tinsley emphasises that the working party is not laying down a syllabus; it is up to the ingenuity of teachers to decide how to incorporate the suggestions into their own courses. It is felt though that every student should be exposed to the topics, whether in computing courses or as part of other subjects.

West Centre Hotel is venue for viewdata exhibition

DESIGNED to attract potential viewdata users and information providers at a time when mass production of viewdata televisions is properly under way, and Prestel is in full service, the Professional Viewdata Exhibition is planned for November.

Sponsored by Viewdata & TV User, a sister magazine to Computer Weekly, the exhibition is supported by Avip, the Association of Viewdata Information Providers as well as the Post Office, the Central Office of Information and the Department of Industry. It is to be held at the West Centre Hotel, London, on November 7 and 8.

Exhibits will include editing equipment, private viewdata and teletext systems, microcomputers for running telesoftware and a variety of user terminals. Peripherals are expected to include printers, bulk storage devices such as cassette recorders and floppy disc drives, keyboards and graphics design aids.

Inquiries are invited from potential exhibitors by the organisers, Iliffe Promotions, Dorset House, Stamford St, London, SE1 9LU. Tel: 01-261 8865.

Mathematica, NCSS deal to market Ramis on 3200

A VERSION of the database management system Ramis II that runs on the National CSS 3200 has been developed by Mathematica Products Group. Called Ramis 3200, it runs under the NCSS operating system VPS.

The software will be marketed in conjunction with the "super minicomputer" by both NCSS and Mathematica, under an agreement permitting each company to sell both products.

As Ramis II has been widely installed by service companies and bureaux, one obvious market for the system will be service company clients whose level of usage now justifies an in-house machine.

The software could also prove attractive for distributed processing applications, permitting Ramis II applications to be off-loaded without change from a mainframe to one or more satellite minicomputers.

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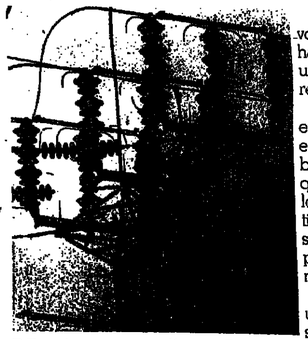

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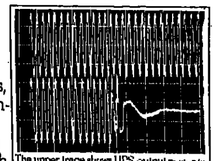

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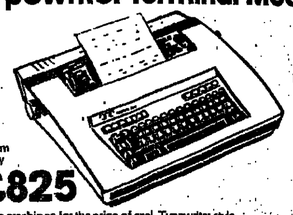

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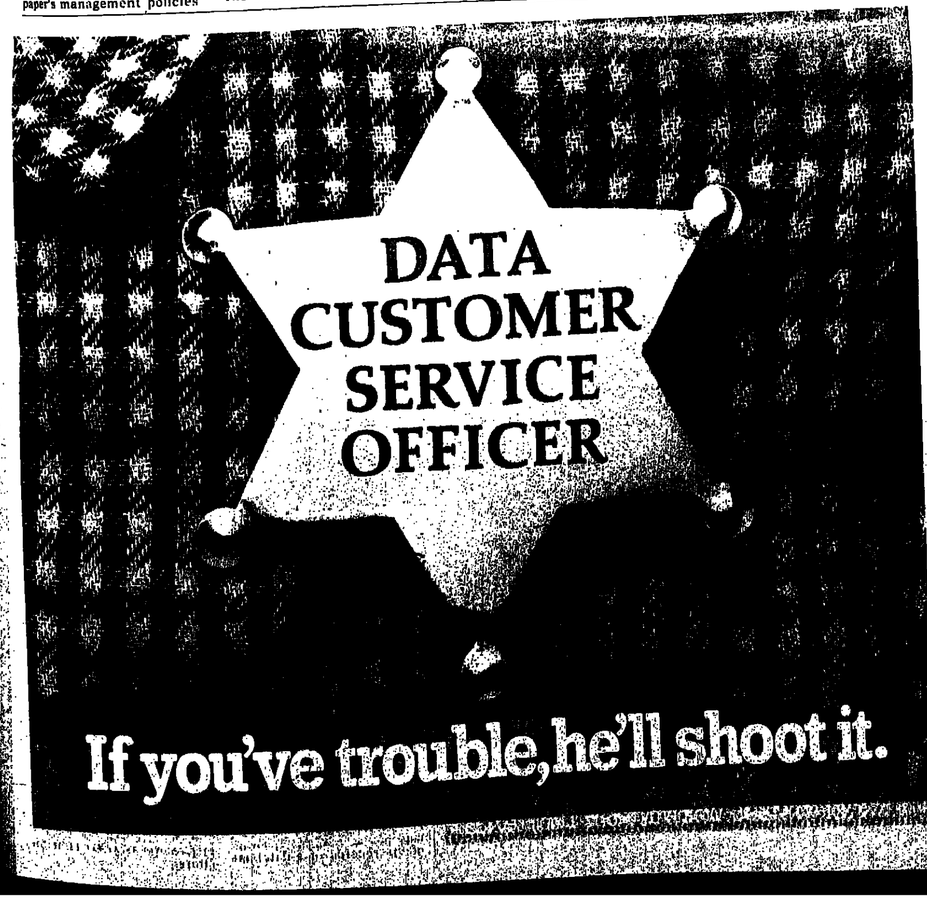

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For purely technical hitches, call our service engineers as usual.

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So, if you've any problem which calls for a rapid answer, call your local area office and ask for him.

Post Office Telecommunications

GILB'S MYTHODOLOGY

Advantages of the checkword

THE checkword technique is well known to the general public, but little understood and practised by computer specialists. I have applied it extensively for almost 20 years, and can highly recommend it as a means of helping detect and even automatically correct input data errors.

The general public knows the concept well as it is used in postal addresses. Using my own address as an example, my postal code is 1410 and the name of my community is Kolbotn. Kolbotn is a checkword for the code 1410.

When writing a bank cheque we write the amount with numbers, for example "1,000" and then we protect the cheque against accidental or deliberate error by writing a checkword (no pun intended) "One thousand."

The name "checkword" is intended to force a mental comparison with the well-known check digit method. Both methods will detect the same group of accidental (keying and handwriting or data-transfer) errors. Depending on how independently of the identifier you gather the checkword, checkword designs will give you a means of making sure not only that the identifier is "valid," but that it actually refers to the real world object which the user intended it to refer to! In one thoroughly audited accounting system, we found that two-thirds of the account number errors we caught had valid check digits, but were incorrect account numbers. Many of these could probably have been caught by means of a checkword.

The only clear advantage of check digit methods is that the checking process can be carried out offline to any sort of file. It is a pure and simple numerical consistency check. In cases where this advantage has been important, I have designed a combined check digit and checkword identifier. The check digit method captures some errors early, such as keying mistakes. Then the checkword method is also used to give us assurance that we have indeed identified the product, customer or account which was originally intended.

Imagine for a moment that all telephone numbers had a check digit which was verified when we dialled a number. We would still dial a lot of wrong telephone numbers, and need to verify the correctness of them by asking for the name of the person (the checkword) we wanted to speak to.

The primary requirement for checking a checkword is that we have a file (table or database will do quite nicely too) so that we can match the input checkword to the corresponding file checkword. In batch processing applications, this means that we don't know about some errors until well after the data has been manually keyed in. Now if knowing immediately is critical, then we should probably go online with the data capture process. Otherwise, it is better to discover that you have an input identifier error late, before you update a file, than not at all or after you have updated it.

A checkword does not have to be a long word. I frequently use two characters, often about four characters and rarely more. The more you do use, the greater the error detection and error correction power you have. In extreme cases we design the checkword so that it is unique. This rarely costs more than 4 to 6 characters. But even with total failure or destruction of the main identifier, it gives 100% probability of fully automatic correction to the intended identifier. The unique checkword is simply used as the search key.

In some cases a checkword is purely numeric. In specific instances I have used the price of a product; the birth date of a bank account holder; or the telephone number of medical doctors, as checkwords.

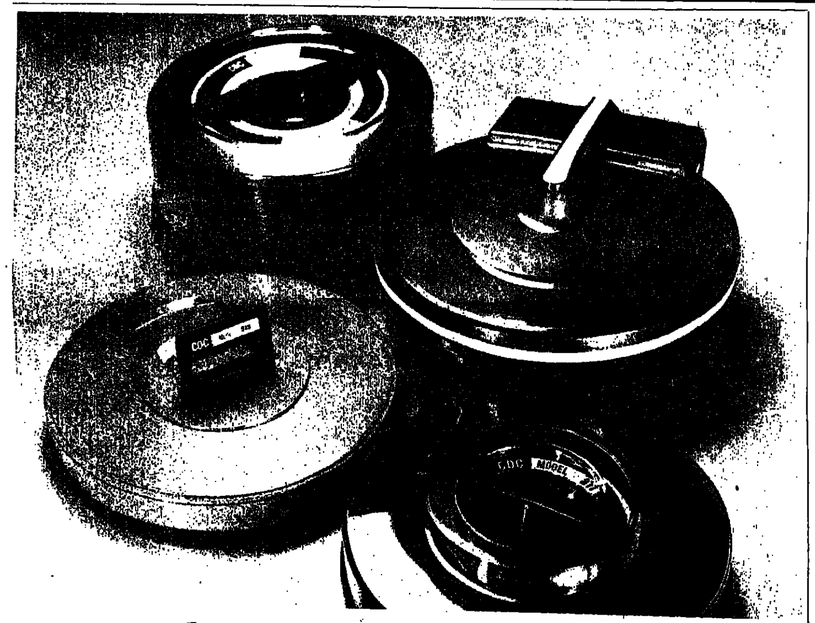
One highly technical view of a checkword is that it is a case of "distinct repetition." I'd better hasten to define the terms. Repetition is serial (but not necessarily continuous) repeating of a term, such as is customary with the numbers in a telegram. For example, using my telephone number "80 16 97 801697". If a single digit is incorrect or digits are transposed, then I can detect this by comparison. In the example, I consciously introduced one type of distinctness by using spacing between digit pairs in one number but not in the other. The telegram introduces a kind of distinctness by repeating numbers at the bottom of the telegram.

For even stronger protection against "parroting" errors, we can introduce even more distinctness into the design. For example "80 16 97 GILB". In this case multiple parroted errors (70 16 97 701697) are almost certain to be detected (80 /6 97 G/LB) as are most other common errors (80% of errors are single-digit ones in some investigations).

In addition, there is more information to develop a correction hypothesis; often one which can be developed and tested automatically. But, frequently, one is developed which can be evaluated with a little human help, by selecting from a short-list of possibilities.

The checkword method has a number of advantages which space does not permit me to explore here. It is easy to add on to existing systems. It is highly applicable to almost all identifier design situations. But we have described it thoroughly in a chapter of our Humanised Input book (Gilb/Weinberg, Prentice-Hall).

I hope the reader of this column has been provoked to review the theory of checkwords, and to try out their application in practice. If you think it won't work, or won't improve your applications, then I suggest that you have NOT understood the method. Try again!



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PROGRAMMER NOTES

How many of your applications are really necessary?

IS the much-discussed shortage of DP staff genuine or is it a by-product of excessive — and unnecessary — computerisation? This is the question raised by a reader from Coventry, who appears to think that many DP applications are redundant.

"The mythical man on the top of the Clapham Omnibus could, after perusing the back end of Computer Weekly, reasonably deduce that the supply of programmers was falling far short of demand.

"But perhaps we should examine whether the demand is greater than it need be. Historically, many users installed computers because Fred down the road had one. When the beast arrived, a decision had to be made about what to use it for.

"'I know! Let's put the payroll on it' must have been a common answer. This application was usually followed by stock control, production control, general ledger, etc.

"This generated the need for bigger systems which, in turn, generated a need for databases and other software tools to make the bigger systems more manageable — and for the programmers to maintain them.

"I don't doubt that some programmers are needed for maintaining existing systems, but how many programmers and DPMs can put their hands on their hearts and say: "These new applications are vital to the profitability of the company"? Not many, I fear.

"Computer software seems to follow Parkinson's Second Law, in that income rises to meet expenditure. In the DP context, output of software rises to meet the capacity of new hardware.

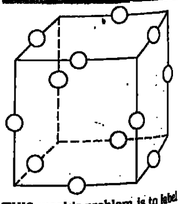
"Many DP departments would be more efficient if they bought most of their software off the peg, and the need to obtain authorisation for the purchase might lead to an examination of the real need for the application.

"All this leads me to believe that there is no shortage of programmers, but too many installations running too many applications which have little or no use.

"Perhaps the industry doesn't want to discuss this issue?"

Programmer Notes is a forum for the discussion of both technical and non-technical matters related to programming. If you are an applications or systems programmer and have views on this issue or any other aspect of programming, please write to: Programmer Notes, Computer Weekly, Dorset House, Stamford Street, London, SE1 8LU.

Puzzler



THIS week's problem is to label each edge of this cube with a different number from 1 to 13, in such a way that (a) the sum of the three edges meeting at each vertex is a constant x, and (b) the sum of the four edges round each face is a constant y.

The first question is to decide which of the thirteen numbers is not to be used. See page 69 for solution.

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SOFTWARE FILE

PETER HEWITT REPORTS ON THE 2900 CLUB

Matching the structures

ONE interesting point made at the meeting related to the management of 2900 communications. The facilities, it was noted, are closely integrated with VME/B as a whole. It would therefore be a mistake to create a team solely devoted to communications services.

Instead, the management and support structure should match the structure of the product.

ICL's telecoms offerings still pose problems for users

AS usual last week's meeting of the 2900 Club was both entertaining and informative. It addressed itself to "Communications Excellence?", concluding that ICL's standard offerings in this field still posed problems for the user.

In some areas, it was argued, VME/B communications facilities were incomplete; where they did exist, they suffered from unreliability and were in the main adequate rather than excellent.

One of the key continuing problems is the VME/B line handling software Kommfy, which ICL confirmed it was rewriting at a 2900 Club meeting early last year (Software File, February 16, 1978).

Describing telecommunications as the "greatest heartache" of the large 2900 systems, Roger Wallhouse of ROC Datasolve said that it was a great disappointment that Kommfy Mark II was still in the distance.

Telecommunications, he said, was the key to the future use of the 2900 series both by bureaux and by large organisations generally. Unless the 2900 had an edge in software, it would lose out to IBM mainframes because of the wide availability of IBM-targeted application software.

The subject of Kommfy was also raised by Ian Battersby, of W. H. Smith. It was, he said, "old and very fragile" and was one of the main obstacles to attaching new terminal types.

"There is a lot of interaction between the different parts of the package, which can lead to interference. If you succeed in attaching a new terminal, it's quite likely to bring down one of the existing ones."

Further emphasising the lack of resilience, the loss of a line for whatever reason would frequently leave it unusable until VME/B was re-loaded.

"A major problem with the communications system as a whole is that diagnosis is remarkably difficult. The chances of getting any diagnostic out of the system are very remote if it goes down, and it's very hard to trace where the error occurred."

Although recovery time was in part determined by the time spent on diagnosis, a recovery time even as good as 20 minutes took a lot of work to achieve. Combined with a mean time between any system failure of around eight hours, the best online availability that could be hoped for was about 90%.

This, though, was perfectly adequate for many commercial applications, including those being run at W. H. Smith.

Later in the afternoon, a call for users to work more sympathetically with ICL on remedying software deficiencies prompted Roger Wallhouse to identify three areas in VME/B and the communication subsystem that should be strengthened.

The first, he said, was the addition of a personal computing facility. There appeared to be no plans for such a facility and its omission was a fundamental weakness seriously limiting the usefulness of the 2900 to large organisations.

Users should also press for improvements in IDMS, TP and multi-access. They had here, he noted, more chance of success with ICL than with other major mainframe manufacturers such as IBM.

Finally, there was scope for joint ventures to develop application software and utilities. For applications such as accounting and management information systems, there should be considerable scope for meeting common requirements with a package.

As evidence of the potential market for utilities, he already knew of more than one package under development for tape library management.

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Interested parties

UNLIKE the official ICL user association, membership of the 2900 Club is not restricted to those who already own a machine or have one on order. According to a recent membership survey, only 53% are existing 2900 users with a further 35% being prospective users. Topics of chief concern to members include performance (81%) and ICL policy (66%) according to the survey.

Scope for tuning VME/B is significant

LIKE IBM's MVS, with which one speaker compared it, VME/B offers considerable scope for tuning. Ian Battersby, of W. H. Smith, emphasised that major savings could be made in resource use by both TP and MAC with relatively little effort.

"It's very easy to generate a 1½ Megabyte application using TP Option. The extravagance, though, is superficial as it's fairly easy to reduce a typical application to between about 500K and 700K.

"Although it depends on the transaction rate, we find that a fairly average TP application supporting around 30 terminals takes around 2%-3% of the OCP power of a 2970.

"By far the greatest share of this — around 50% to 60%—is consumed in file handling and block and record I/O, with less than 1% accounted for by the Cobol application code. There is thus lots of scope for tuning at the system level."

Battersby also noted that it had been possible to halve the response time on one application by reconsidering the object program collection strategy.

"MAC is also amenable to tuning, particularly by adjusting the main store quota. This is a trade-off of virtual storage overhead against size, making it relatively straightforward to save significant percentages of OCP time."

W. H. Smith, he noted, ran with a MAC concurrency of between 10 and 16 for program development during the day and had settled on a quota of 144K. This took around 3.5% of the OCP power of a 2970 per session.

His general conclusion was that the sophisticated scheduling algorithms in VME/B made it perfectly possible to run a mixture of batch, RJE, TP and MAC services quite adequate for most commercial users.

Praise for TP Option not extended to MAC and RJE

VME/B's TP Option was alone singled out for praise by Ian Battersby in an illuminating review of the three main VME/B communications subsystems in use at W. H. Smith's.

Both its facilities and its usability were good, he said, whereas those of MAC and RJE could at best be described as adequate.

Although W. H. Smith had so far used TP Option only for file inquiry applications, it had found in the software all the essential facilities needed to write commercial TP programs. Further, all the facilities needed had worked.

"Programming the applications was straightforward and the Cobol interface was simple, though not standard. The package provides a good batch-oriented testing envelope, enabling one to drive a stream of test transactions through the system before going to online testing."

Comprehensive facilities were also available to the system programmer in such areas as resource utilisation and response time tuning, and file integrity and security.

Both MAC and RJE, on the other hand, provided little more than a basic window into batch facilities and their usability suffered as a result.

"MAC, for example, provides the same editor as in batch, and so makes no use of the full capabilities of the screen. Similarly, the diagnostics are batch-oriented and consequently ill adapted to screen working, in particular by being too verbose."

The terminal facilities worked well, he said, with ICL equipment and were well integrated with the System Command Language. However, it was a "long uphill slog" with other devices except in the case of teletype-compatible equipment.

"The usability of RJE is primitive, as it gives the operator poor visibility on to his own job. Oddly, he has a much better view of other people's work and can both see and interfere with other jobs, creating a security problem."

"These problems can be overcome, though, with user system programming.

"In general, I can't describe 2900 communications as excellent," he concluded, "but for our purposes, they are adequate."

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OP SPOT

By Bernard Allen

Ex-TOPS student's job satisfaction

Steve Ward

AFTER experiencing some initial problems, former TOPS operations student Steve Ward is now settled and getting on well in the computer industry.

He is employed as an operator at the Sevenoaks site of Jermyn Industries, having been forced to leave the Banker Automated Clearing Services Edgware installation because he was unable to find accommodation in the North London area (Op Spot, May 24).

"There's a nice, family-like atmosphere at the site and I'm really pleased to have got the job, particularly after the problems I had in London," said Steve, who met me in London the other week to discuss his progress in the industry.

The junior partner of a two-man team, he works an eight-hour, three-shift system five days a week, with some overtime at weekends.

They operate a Univac 90/30, running under the OS3 operating system which, according to Steve, "calls for a minimum of intervention on the part of the operator."

So far all of his training has been hands-on, under the supervision of the shift leader.

Said Steve, "The operations manager leaves most of the training of staff to the shift leaders. So far I have picked up quite a bit about the system's job control language.

"When I first joined the company I was down to go on a JCL course but one of the lads who has been at the site a bit longer than me was sent on it instead. Still, I hope to go on the course some time in the future."

Steve was, in fact, sent on a course during his short stay at BACS in Edgware. He continued:

"I went on an ICL 1900 course for beginners, held at ICL Letchworth, and I quite enjoyed it. The company put us up in a hotel for two weeks — that was great."

The BACS installation, with its three ICL 2950s, two ICL 1904S systems, and eight-man shift teams, provides an interesting contrast with his present site.

"I liked it at BACS and would have stayed there if I had been able to find a place to stay in the North London area. But, in a way, I'm glad I moved because the Jermyn site is run on more informal lines.

"For a start, I am now a part of a small team, and that means seeing jobs through from start to finish, which gives me a considerable amount of job satisfaction.

"And at BACS we had to wear a suit on the day and evening shifts, whereas now I can dress a bit more informally. I prefer that."

But his working environment will change a bit very soon, because expansion plans are in hand at Jermyn Industries.

Said Steve, "We're getting a Univac 90/40 installed some time during September, and to house it the company has built a computer room which is about two and half times as big as our present one."

The company is also to provide a rest-room for the operators. He continued: "We're pleased about that. We already have a microwave oven but that seems to spoil the taste of the food. We're hoping to get a fridge."

In line with the machine upgrade, the operators are to move on to a twelve-hour shift system, providing around-the-clock cover, seven days a week.

"The system we're going over to involves working four days on earlies and four on nights, with four days off in between," he said.

Asked for his reflections on the TOPS operations course at Borehamwood College, Steve replied, "It's been of real value to me, it really has. For example, I learnt about the hexadecimal numbering system which I have to use to make system diagnostics when a system halt occurs.

"I've got one complaint, though — all the pubs around the Borehamwood area seem to have Ind Coope bitter, whereas Whitbread is my favourite," he added with a grin.

Satisfied customer

PETER Aken, a senior operator at the Burton-on-Trent site of Pirelli, contacted me to discuss the IBM OS pseudo-writer — a facility which, effectively, causes the system to erase unwanted output.

So I sent him a copy of an Op Spot piece on the subject (CW, July 13, 1978) and was pleased to learn that he had few problems in adding the writer to his system.

He told me, "With the help of our software programmers, I was able to add the writer to our system in less than a day. I learnt a lot doing it, too.

"It saves us an awful lot of stationery and the junior operators are particularly pleased with it because they have less work to do on the printers."

Remember, we welcome comments

OPERATORS often complain that nobody listens to their point of view. Well, Op Spot is listening and Bernard Allen would like to hear from you.

Your letters should be sent to Op Spot, Computer Weekly, Dorset House, Stamford Street, London SE1 9LU. Bernard can also be contacted directly on 01-261 8035.

Using the IBM OS operator commands—Cancel

IN past Op Spots I have given an overview of the IBM OS operating system and discussed certain parts of it — the reader, writer and initiator procedures — in greater detail.

And starting this week, I intend to give further attention to the OS operator commands, some of which can be used in a number of ways. Although these discussions are intended primarily for persons with little or no IBM OS experience, I would welcome comments from operations staff familiar with the system.

The CANCEL command. By means of this command, the operator can abort a job at any stage of its processing. The word "cancel" may be abbreviated by the letter "C" and the command has the following format:

C XXJOB1

When the above command is entered by the operator, the system will look to see if job XXJOB1 is actually in store and if it is, will abort it.

For the system to produce a dump along with the job control language listing of XXJOB1, the operator must tag the word "dump" on to the end of the command, thus:

C XXJOB1,DUMP

If the operator has to cancel it at input stage from, for example, input queue "A", he enters

C XXJOB1,IN=A

To cancel it from output queue "A", he enters

C XXJOB1,OUT=A

It is also possible to cancel a job which is actually in the process of being printed. To do this the operator specifies the address of the printer being used, or the identifier of the writer. For example:

C 00F

System procedures, that is, readers, writers and initiators, can also be cancelled by the operator, but only when they are at the initiation, or starting, stage.

This facility proved to be extremely useful on one occasion at a site where I was once employed as an operator. One of the staff had tried to start a writer to a printer which had already been allocated as hard-copy log to the TP network which ran throughout the day.

The writer became stuck in the system, with the results that several members of the technical support team were called to the computer room. They were about to cancel the TP network, an action which would have caused the users considerable inconvenience, when one of the operators suggested cancelling the writer and thereby saved the day.

Poor printing with ICL 1933s is ops' fault, says bureau director

Gerry Mills

"THE common reason for poor print quality with ICL 1933 printers is failure by the operators to make routine adjustments."

Thus Gerry Mills, managing director of Mills Associates, a group of computer bureaux, responds to some comments about those printers from David Millar, a shift leader at the Imperial Group in Bristol (Op Spot, May 10).

"You repeated a popular misconception amongst operators concerning the print quality available from the ICL 1933 printers," he writes.

Supporting his views, he continues, "My company both maintains and uses many line printers of this type, some of which are over ten years old."

He concedes that the design of the ICL 1933 "precludes" high print quality, but points out that "reasonable print quality" can be maintained without too much attention from engineers, provided that the printer barrels and hammer trays are frequently replaced.

"If a DP manager must have reasonable print quality from his ICL 1933 and is prepared to pay for it, we know that it can be provided," he adds.

Phasing out of shift allowances

SOME time ago I reported Barclays Bank International's plans to implement a scheme intended to help staff overcome the loss of allowance in the event of moving from shift work (Op Spot, March 22).

On that occasion, I mentioned hearing about proposals of schemes similar to Barclays' — which involves phasing out the allowance over a nine-month period, rather than stopping it as soon as the operator comes off shift — but said that none were ever put into practice.

In response, Brian Ross, an operator with Prudential Assurance, writes, "As far as I can remember we have always been able to phase out our allowance, should we get transferred off shift — and over a full three years, not just nine months.

"With our 20% allowance most of us are getting over £1,000 per year from shifts, and if there wasn't such a scheme I doubt if any of us would be able to move."

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TIM PALMER REVIEWS RECENT DEVELOPMENTS AT ICL

X25 software with new VME/B

HEADING the list of new software with the new ICL machines is the 5X36 release of VME/B, available for Spring 1980 installation.

It includes an X25 implementation for attachment to Euronet, Transpac in France and the forthcoming UK Packet Switched Service, and ICL claims that it provides an efficient combination of batch, MAC multiple access for program development, teleprocessing, and RJE.

The new TPMS transaction processing enhancement is available under both 5X32 and 5X36, and new features to aid security of RJE systems and to enhance error recovery are included in the new release.

The 2956/10 becomes a linchpin of the product line, since it runs VME/B, previously only available on a large 2960 and above. The 2956/10 needs about 1½ Megabytes to run VME/B, and ICL says it has been introduced principally for people who want to begin distributing centrally developed applications around several sites.

However, now that VME/B is available on all but the 2950/10, the importance of VME/K is somewhat diminished. VME/K is currently running at about 20 ICL sites.

The 2956/10 also runs DME/George 3, DME/2, DME/3 and VME/K; people wanting to use DME/System 4 have to go to the 2960/10.

When originally announced, the smallest 2960 cost £520,000, and it would have cost nearer £1 million to run VME/B, so the entry price for the large-scale operating system has been reduced dramatically; the concept of distributing centrally developed applications around regional sites follows the policy of IBM with the 4331 and 4341; however, VME/B is ICL's answer to MVS, and IBM at present has nothing comparable with the 2956/10 on which to run MVS; the nearest thing would be a 370/148, which adequately supports MVS.

ICL is very pleased with its new simplified IDMS subset, IDMS-E, which is cheaper and easier to use than the full version and is aimed at 290X users who have hitherto regarded databases as outside their orbit. It includes a cut-down version of the Data Dictionary System, which was hitherto only offered on the larger machines, and is, says ICL, a product which could be sold back to Cullinane, the originators and licensors of IDMS, for wider marketing.

ICL is striving for a common system superstructure across VME/B, VME/K and the various DMEs, and has made a start with Range Cobol, based on the VME/B Cobol compiler. Other Range compilers are coming and the company is also trying to increase commonality in teleprocessing management systems and file structures and formats.

2982 double price/performance claimed

WITH the new additions announced over the past two weeks, the ICL 2900 line now consists entirely of new processors; the original 2970 processor was pensioned off last year, and the 2980 and old 2960 are only being built for users wanting to add another processor to an existing configuration.

The 2982 ranges in price from £1.25 million for an Order Code Processor, one SAC store access communications controller, one SMAC store multiple access controller, and four Megabytes of memory, to £1.75 million for a similar configuration with 16 Megabytes.

ICL's memory is actually cheaper than that offered by IBM on the 3030 series; ICL is charging £60,000 for two Megabytes, whereas IBM's US price for 3030 memory is $70,000 per Megabyte.

The SAC, SMAC and store is common across the 2960/10, 2972, 2978 and 2982, and each machine is available with one or two OCPs, SACs and SMACs. A single processor 2982 matches the 3032, and a dual processor matches a uniprocessor 3033.

ICL claims that the 2982 offers double the price/performance of the 2980, a key feature of its design being an integral 16K-byte cache memory which is integrated into the processor contiguous to the arithmetic unit to avoid contention for the cache from input-output requests.

ICL is also promoting the power of the Distributed Array Processor, DAP, when coupled to the 2982; the combination allows a system with up to 40 Megabytes of main memory to be assembled. The first DAP is set for delivery to Queen Mary College, London in December.

The next processor down is that used in the 2972 and 2976; the former is now offered with up to 12 Megabytes and the latter with 16.

Next comes the new 2960/10, which is the biggest to offer microcoded emulation; the top two processors are hardwired. It is claimed to be 10% faster than the 2960 and offers four times the main memory — up to 8 Mbytes.

The smallest processor is used in the 2950/10, 2958/10 and 2905; the 2956/10 approximates to the power of the 2960 as originally announced, and field-upgrades are possible from a 2905 through to a 2950/10.

Dataskil rates 2972 close to 470 V/6

SOME interesting figures suggesting that a 2972 could be comparable with an Amdahl 470 V/6 were presented by Roger Wallhouse, of BOC Datasolve, in the course of a discussion on the 2900 as a bureau machine at the ICL 2900 club meeting last week.

BOC Datasolve is in the rare position of being able to compare the performance of a variety of large mainframes, as it is currently running not only a 2972 and 470V/6 but also a 370/158 MP.

The following formula was devised to provide the comparison figures. The power of a machine in mips, million instructions per second, is measured against the cost in pounds. Thus the 2972 delivers 140 mips against a cost of £0.9 million. Cost is divided by MIPS to give the power unit.

According to these price/performance figures, the V/6 and 2972 compete closely for the distinction of "best buy", being rated at 7.79 and 6.43 respectively. By contrast, it rates a 2970 at 12.73 and the 158 MP at a disappointing 32.05.

A 3032 it rates at 19.00 while a 3031 comes in at about the same figure as a 2970.

The figures, which dramatically highlight the attractiveness of the 2972 over the 2970, are backed up to some extent by Computer Resource Unit, CRU, measurements for comparable jobs. Wallhouse admitted that the charging algorithms could well vary a lot.

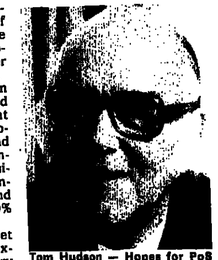
UK business in first half at highest level ever

PARTICULARLY strong business in the UK was a feature of ICL's first half, in which the company returned pre-tax profits of £18.6 million on turnover of £285.1 million (CW, May 31).

The company says orders in hand are the highest ever, and believes that both government spending cuts and the deteriorating business climate will lead to increased demand for computers; one-third of its UK business is with public sector organisations, taking in national and local government and 100% nationalised industries.

ICL has been trying to get research and development expenditure down to the industry average of 7% to 8% of turnover, and it is in reach of its target, implying an R&D investment this year of about £55 million.

On the vital services front, the company now has 400 full-time lecturers and is building a strong training presence in continental Europe, with centres in Paris, The Hague and Frankfurt, while the group's software company, Dataskil, has doubled its business over two years.



Tom Hudson — Hopes for PoS sales in the US.

Chairman Tom Hudson is hopeful that the company will achieve a foothold in the US with its new 9500 point of sale terminals, but regards the present maintenance agreement with TRW as unsatisfactory in that the US company is a competitor in the point of sale market.

Loss-making last year, the US subsidiary is closer to profitability and should break even in the last month of the year; the Utica, New York factory is a vital ICL outpost, now contributing 15% of the hardware manufactured by ICL.

The inflation element in ICL's figures is put at no more than 3% half-year on half-year, which means that the company has a real growth rate of over 20%, well in excess of that of the industry as a whole. On the half-year figures, Graham Meek, electronics companies analyst at stockbrokers Wood Mackenzie, looks for a profit of £46.5 million on turnover of £630 million on the full year at the end of September.

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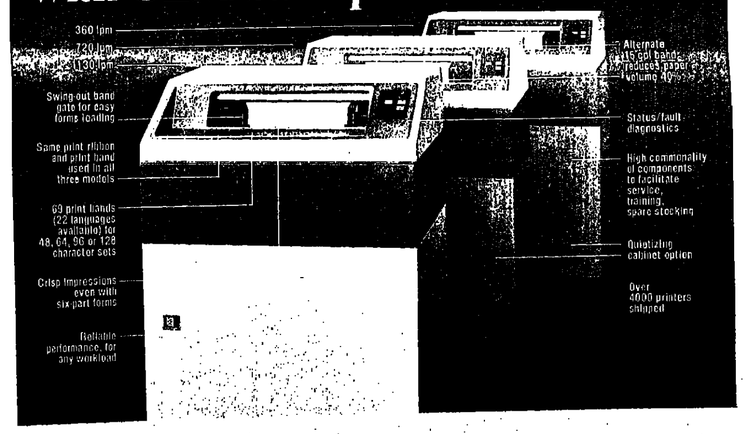

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CONTROL DATA
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PEOPLE AND EVENTS

By Judith Morris

Geest reorganises top management

GEEST Computer Services has announced several organisational changes, which include the creation of a management board and two divisional boards.

The management board will direct policy, planning and financial matters and Dr Colin Cooke will be a member, continuing in his role as non-executive chairman. Clifford Vivian, who is chief executive of the parent company, the Geest Organisation, will participate as vice-chairman of Geest Computer Services.

Philip Wainwright will continue as managing director with executive responsibility for the overall management and co-ordination of Geest Computer Services. Graham Gough becomes development director.

The two divisional boards will report directly to the management board, and will each be responsible for operational control and co-ordination of their respective divisions. Philip Wainwright will be managing director of the bureau division board, and Derek Bilby, who is managing director of Cambridge Computer Services, Les O'Reilly, director of Eastern Computer Services and Denis Churchill, managing director of Midlands Computer Centre, will also assist on the board.

A new data products division will be formed under Graham Gough as managing director, and Philip Wainwright will also be a member of this board. The division will be made up of the existing Geest Minicomputer Systems, and a new division, Geest Microsystems.

Geest is aiming at two major market segments in the new operation; major users who wish to enhance the responsiveness of their existing mainframe operations, and small users who need local intelligence to utilise a comprehensive range of packages.

Girl Technician of the Year

TO focus attention on electrical and electronic engineering as a worthwhile career for women, the Caroline Haslett Memorial Trust and the IEETE will be offering prize money of £250 to the winner of their competition to find the 'Girl Technician Engineer of the Year.'

The winner will be an outstanding technician, chosen for having successfully undertaken the necessary technical education and having proved herself capable of holding a responsible job.

It is hoped that the competition will encourage other women to join the profession. The closing date for nominations is September 19, and details are available from Eileen Sheldon of the IEETE, on 01-836 3357.

A lower accident rate than the national average within the computer industry has won an Industrial Safety Award for Data Recording Instrument Company. The awards are presented annually by the British Safety Council, and this is the fifth consecutive year that DRI has won the award, which entitles the company to fly the British Council flag over its premises for a year.

The presentation ceremony took place at Grosvenor House Hotel, in Park Lane. Guest of honour was James Prior MP, Secretary of State for Employment. Our picture shows Alan Brabiner, safety and security officer of Data Recording, and his wife Ekale, receiving the award from James Tye, who is director general of the British Safety Council.

Stavely Ferguson, a former systems analyst with British Airways, has joined Systemsolve (Computer Services) as a senior analyst programmer, and **Simon McNeil**, previously with the British Library, has become junior analyst and programmer. **William Leach**, who was previously with Legal and General, has been appointed an analyst/programmer with Systemsolve.

Ian Hillier-Brook has joined the financial systems division of Gamma Associates. He was until recently market development manager for the insurance industry with Digital Equipment, working at the company's headquarters in the US.

Paul Williams has been appointed as division director of personnel resources for NCR. His previous position with the company was industrial relations manager.

Ted Litton has been appointed as managing director of Rochford-Thompson prior to the opening of the company's new factory complex in Hambridge Lane, Reading. Litton is a former financial controller and company secretary of Tibett and Britten.

Allen Brain has joined Tandem Computers as a sales executive with responsibility for finance and banking. He was formerly a sales manager with Prime.

Karl Nightingale, a former marketing advisor for the industrial products section of the Irish Export Board, has been appointed marketing manager for Mohawk Europa, based in Limerick, Ireland.

David Griffiths has been appointed product sales manager for liquid crystal displays with Hamlin. He joined the company as internal technical sales engineer in 1977.

Paul Fockens has been chosen to head Modcomp in the Netherlands. He has worked in the computer industry since 1968, in Europe and in the US.

CW soccer results

Division 1
Altergo 1, Gryphon 1
Atkins 2, SIA 3

Division 2
SBS 2, Comshare 5

Division 3
Computer Weekly 5, 3M 2
Computer Weekly 3, CJB 1
Sherwood 4, UCSL 0
UCSL 2, Computer Weekly 3
CJB 3, 3M 1

Division 4
CDC 1, Forest 5
Hoskyns 2, Wellcrex 11
Jadpu 'B' 2, Allen 2

Division 5
Ventek 2, Kingston 3
NCR 1, British Aerospace 4
Barrow 0, Gill & Duffus 3

Changes at Fluke

FLUKE International has changed the name of its Trendar division, and in the UK this group will be known as the Fluke Automated Systems Group.

Newly appointed to this division is Vic Collins, who will provide technical support for the full range of board test equipment. He recently joined the company from Micropower where he was UK sales and marketing manager for Zilog microcomputers and support boards.

The address of the Automated Systems Group is at the company's new premises at Colonial Way, Watford.

Gareth Bennett, previously systems designer for the Royal National Institute for the Blind, has now been appointed manager of computer services. Since joining the RNIB Bennett has worked on computer translation of text into Braille.

Goddard

Low

Dave Goddard has become European service manager for Versatec, in charge of the company's European engineering operations throughout Europe including the UK. He was formerly UK service manager.

Graeme Low has been appointed UK sales manager for the sales and marketing organisation of Beckman Instruments. He was formerly sales engineer with the company.

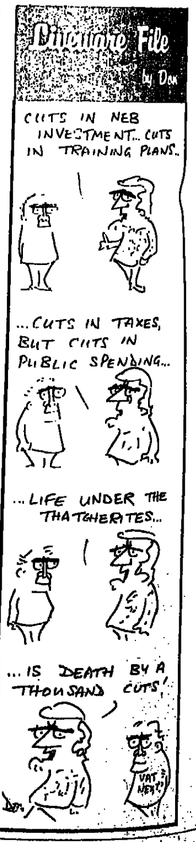
Director of Plessey

PLESSEY Telecommunications has appointed a new director, Air Marshal Sir Herbert Durkin, to its board. He was until recently controller of engineering and supply for the Royal Air Force, up to his retirement. Sir Herbert will act as a technical adviser to the managing director of Plessey Telecommunications, Desmond Pitcher. The company is shortly to change its name to Plessey Telecommunications and Office Systems. Sir Herbert has held several senior positions and was director of engineering at the Ministry of Defence from 1967-69.

Fellowship

John Barnes, who is director of language research at SPL International's research centre, has been appointed an industrial fellow of Wolfson College, Oxford. This will be with the programming research group which is led by Professor C.A.R. Hoare.

Barnes is a member of the team which recently designed Ada, the future language for embedded systems.



DIARY

JUNE 11
Finding finance for the small business. CAET, Drury Lane Hotel, Drury Lane, London WC1.

JUNE 11-13
Technical study in legal information retrieval in Europe — symposium on results of the study. European Commission, and Council of Europe. Council of Europe, Palais d'Europe, Avenue de l'Europe, Strasbourg, France.

JUNE 14
Structured Programming. North East London Polytechnic, Barking, London. Details 01-599 5141, ext 40.

Simplicity and approximation in sequential pattern identification. B. Gaines. Oxford University, Keble Road, Oxford. 16.00.

JUNE 18
World fertility survey: technical problems of international research, and AGM. Study group on computers in survey analysis. London School of Hygiene and Tropical Medicine, Kepper Street, London WC1. 17.30.

JUNE 18-21
IMMM '79 Exhibition and conference. London Chamber of Commerce, Geneva. Contact Cliff Land, London Chamber of Commerce, 01-248 4444.

JUNE 20
Who will use the general purpose computer? IDPM. Pearl and Dean Studio, Broadwick House, Broadwick Street, London WI. 18.00.

New approaches to systems analysis and design. H. Gearing, E. Mumford. OCS. Kensington Close Hotel, London W.8. 09.30.

Distributed processing. North East London Polytechnic, Barking. Details 01-599 5141 ext 49.

JUNE 21
Pattern recognition and flexible automation. J. Weaver. Oxford University. Nuclear Physics lecture theatre, Keble Road, Oxford. 18.30.

JUNE 20-22
FTCS-9, the ninth annual international conference on fault-tolerant computing. IEEE Computer Society, Madison, Wisconsin. Contact IEEE Computer Society, 5855 Naples Plaza, Suite 301, Long Beach, CA 90803.

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NEWS IN BRIEF

Japanese order giant

THE Mighty new Burroughs Scientific Processor, which runs as a back-end to the large-scale B7800 mainframe, has found favour with the big Japanese Information Processing Services bureau in Tokyo. JIPS is to pay $9 million for a BSP with B7800, for installation in 12 months' time.

The BSP consists of an array of 16 arithmetic processors which operate concurrently on related data elements. The principle is similar to that used in ICL's Distributed Array Processor, DAP, but there are many fewer processors in the BSP, and each is much more powerful than those in the DAP.

Updating

OVER 30 UK building societies are installing ITT 3330 Dataprinters at their head offices to improve communications with, and processing abilities from, computer bureau Centre-File. The new printers replace paper tape equipment and handle the updating of customer files held on Centre-File's IBM 3033 and 3032 systems in London.

Replacement

A NEED for better computing resources and future systems flexibility has resulted in Firth Brown Tools, a manufacturer of engineers' cutting tools, replacing its Honeywell 2040 with a Honeywell Level 64/20 machine. It has been installed at the company's Sheffield headquarters and features 312K main memory and three 100 Mbyte disc drives. Applications the 64/20 will handle include order entry, stock control and general accounting.

Traffic scheme

A TRAFFIC scheme, sponsored by the Department of Transport and Devon County Council, has begun operating in Torbay, where 27 sets of traffic lights and 22 pelican crossings are now controlled by a Plessey Co-ordinator system housed at Paignton police station. The scheme cost £300,000.

Unions stress role of training in expansion

A MASSIVE expansion of worker training must be undertaken by the government if the UK is to become one of the new technology "winners" of the 1980s.

This was just one of the points made by TUC leader Len Murray at a conference on employment and technology held in London last week, which typifies the kind of stirring that is now being seen in the majority of trade unions when "new technology" is mentioned.

The initial anti-technology thrust from wary unions has now been converted into a spate of studies that seek to assess how new technology, and more specifically, microelectronics, will affect their members and organisational structure.

"The accelerated change which we foresee is not going to take place on the employers' terms alone, as happened in the first industrial revolution," said Murray, who accepts the thesis that our society is already in the shadow of the second industrial revolution.

Instead, Murray states that all changes must be wrought "on the basis of consent (of the workers and unions) to maximise the benefits and minimise the costs, and to ensure that the benefits are equitably shared in both national and international terms."

Government action by itself will not be enough, however, and this is a great challenge to the trade union movement which must, as the TUC Interim Report on Employment and Technology concludes, "develop its structures, policies and capacities to meet these changing demands."

One example of a union/employer confrontation over reductions in the workforce is that related to Philips industries, the consumer appliance to computer company.

The European Metalworkers Federation, which represents seven million workers in 14 European countries, has criticised the Philips Group for its "cutbacks" of 24,000 workers over the last six years and claimed that an internal study suggests that further cuts of up to 20,000 jobs would take place by 1991 in the Netherlands alone.

So in a bid to arrest what it sees as a threatening and serious situation, EMF affiliated unions, including the Association of Scientific, Technical and Managerial Staffs and AUEW/Tass, have launched a campaign to make the Philips workforce aware of the situation.

"We are seeking to achieve three common demands," said Tim Webb, national officer of ASTMS and secretary of the Philips Industries Joint Council, "and these are security of employment; a reduction in working time; and improvements in general working conditions."

Citing the apparent reversal of intention by Philips management in Eindhoven, Netherlands, in not meeting an EMF delegation in 1975 to discuss employment problems, Webb stressed that everything is being done to follow through with the agreed negotiating procedures in an attempt to correct this.

In response to the EMF criticism, a Philips spokesman said: "We have no plans at present to make any more cuts. The prediction of 20,000 less workers by 1991 was a 'worst case' report and was not based on any current plans that we have."

A CONSTRUCTION site cabin has become the temporary home of a Mohawk Data Sciences 21/40 system while it is being used by Tarmac National Construction in an £18 million contract to provide foundations for extensions to the Drax power station in Yorkshire. It will be used for on-site engineering calculations and communicates with a central computer at Tarmac's Wolverhampton office. A further 10 systems — seven MDS 21/40s and three 21/60s — have also been ordered for other Tarmac sites.

Tandem into Europe

FOR a new company, Tandem has done an exceptionally large proportion of its business in Europe, and has consequently decided to manufacture locally for the European market.

The plant is to be in Neufahrn, just north of Munich, and production is due to begin in September. The German market, where Tandem opened for business in Europe, has brought 27 installations comprising 76 processors; in the rest of Europe, 14 systems with 24 processors have been sold. Tandem's NonStop 16 system is sold with a minimum of two processors.

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09.30	Introduction
09.45	The evolution of the PDP - 11 and LSI - 11 family
10.30	Break for morning coffee
11.00	How the LSI - 11/23 fits into the overall microcomputer spectrum
11.30	LSI Software - the issues and the products
12.30	Lunch
13.45	LSI - 11/23 - architecture and design
14.45	Support hardware for the LSI - 11/23
15.30	Break for afternoon tea
16.00	How to develop an LSI - 11/23 based system
16.30	LSI - 11/23 - pricing and availability
16.45	Question and answer session

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The LSI-11/23 has been developed from the famous PDP-11 family of microcomputers and replaces the LSI-11/2 as the most powerful microcomputer in the DEC range. The LSI-11/23 is as powerful as the PDP-11/34, yet it is contained on the same size board (2 wide) as the LSI-11/2. The LSI 11/23 is 100% software and hardware compatible with the LSI-11/2 and can be plugged in place of an LSI-11/2 in any system to provide a massive increase in performance.

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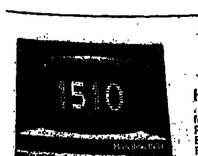

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Weathermen's sale boosts Cray profit

THE sale in February of the Cray 1 for the European Centre for Medium Range Weather Forecasting, at Shinfield Park, near Reading, Berks (CW, April 7, 1977), was the major factor in the $2,862,000 profit shown by Cray Research in the first quarter of this year. In the same period last year the company had a loss of $211,000.

John Rollwagen, president of Cray, said the company did not expect "this extreme high level of earnings" for the rest of the year. However, the company has just sold a second 1 Megaword machine in the UK which should give the figures another boost.

This second machine is the Cray-1 ordered by the Ministry of Defence for the Atomic Weapons Research Establishment at Aldermaston, Berks (CW, April 20, 1978). Estimated to cost about £6 million, the system was delivered and accepted in March and development work that had been started on an interim 500K-word Cray, housed at the Rutherford Laboratory, is being expanded.

The 500K machine has now been moved to the Science Research Council's Daresbury Laboratory where it is being used to provide computing power to about 20 groups of researchers working on various projects (CW, May 10).

This same machine was also used by the ECMWF when that organisation was first established in 1976 (CW, November 11, 1976). It was for the Met men that it was installed at Rutherford, where there was a spare computer hall, so that work could start on the weather programs.

The ECMWF is now in its permanent home at Shinfield Park, and its Cray, front-ended by a CDC Cyber 175, is due to go into full operation next month.

Postcode in every home

COMPLETION of the Post Office's £50 million mechanisation programme for the postal services is now scheduled for the end of 1982. Vitally dependent on universal use of postcodes, the systems will have a boost over the coming 12 months, with every home getting a reminder of its postcode.

The mechanised letter offices use a system designed around Hewlett-Packard minis.

● A Pentex export version of the standard TXE 2 reed relay small telephone exchange has been installed by the PO in the UK network at Warrington.

No trouble at mill...

PAPER maker Wiggins Teape is using telex-compatible Vitel VDUs (above) to transmit the details from sales forms to telex machines at its mills, while the printed form itself is stored locally on transparencies. The two are married up on receipt by overlaying the transparency on the telex printout and photocopying.

The Vitel VDUs supplied by ATS Communications, of Haywards Heath, in a £23,000 order, are installed in 11 of the 18 UK branch offices. They link to the mills via an existing TT 600 series ADX message switch already in use in the company's leased line telex network.

The VDU assists data entry by displaying prompts for each entry in the correct position on the screen, and messages can be edited before being sent.

NEWEST plant in Digital Equipment's European empire is the one in Ayr, Scotland, shown here, which was opened last month by the new Secretary of State for Scotland, George Younger MP. DEC president Ken Olsen was also to have been present, but was prevented by illness in the family.

The Ayr plant employs 300 people and 50 of DEC's own minicomputers on final assembly and test of models in the PDP-11 line from the 11/04 to the 11/70.

How to close the 'Software Gap'

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MICRO NEWS

By Martin Banks

New firms that combine skills predicted by NS

A NEW type of company that combines the skills of the semiconductor manufacturer with the capabilities of the systems house is the way to future success in applying microelectronics, according to Bob Heikes, international vice-president of National Semiconductor.

He was speaking at the recent Infotech conference on Microelectronics and Data Processing — the Next Five Years, held in London. It was an occasion on which he once again expounded his views on the block to future developments in micro-based systems currently put up by software, a view he forcibly expressed at last year's National Computing Conference in Anaheim.

The two existing sectors in the industry that he outlined are the pure semiconductor house, now moving rapidly towards the production of VLSI devices, and the pure systems or end equipment manufacturer.

To this he added the new third component, the Vertically Integrated Systems-on-silicon House, or Vish, a combination that National among other semiconductor manufacturers is rapidly moving into. It is also an area strongly addressed by a growing number of systems manufacturers, with IBM leading the way.

It is this combination that Heikes feels will prove to be the most successful in the marketplace.

He took as a starting point in his lecture the fact that the semiconductor industry will fairly soon be able to purchase in volume devices with one million active elements at a cost of tens of dollars.

"As time goes on," he said, "it becomes more difficult to differentiate the component from the system. The system becomes a piece of silicon in a box with its accompanying software. It can be differentiated at silicon or software level, or both."

The advantage that a Vish company has is the ability to do both, and in any proportion it sees fit, he stated. "It can most rapidly adapt to the enormous force for change that is continually presented by the exponentially increasing capability of silicon technology."

The next question he addressed was which of the two "pure" operating areas would produce companies that were the most successful. Perhaps unsurprisingly, he came down on the side of the semiconductor company integrating upwards.

This was justified, he said, by the economies of semiconductor manufacture. A minimum wafer fabrication plant costs $20 million to put up, and must produce about $30 million output per year to be economic. In addition, this would only be running a single process.

If this product is predominantly for internal consumption by the systems house, he suggested that only companies worth $2 billion and over, solely in electronics, could effectively make the move.

A semiconductor company on the other hand has easier problems to face, Heikes claimed. For a start, the growing device complexity is leading many semiconductor manufacturers close to the systems area already, so the addition of suitable marketing skills for a full systems enterprise is far easier to acquire, for much of it is already available in-house.

The major problem area he sees for semiconductor companies is that of forming a strong software development group to support the systems operation.

And software of course, as Heikes has said before, is the big stumbling block to be overcome.

Though the cost per function of semiconductor devices is falling rapidly, the cost per line of debugged code is staying at least constant, and perhaps even increasing slightly, he said.

"This comes about because the intelligence per line of code is not increasing rapidly enough to compensate for the ever increasing labour costs.

"A revolution in software is needed even to handle the immediately foreseeable generation of chips. Yet none is in sight," he said.

As an aside, he threw in the suggestion that the present ones, zeros, and sequences of logic statements currently used in the generation of software is the wrong way to go. "Certainly, the brain does not function that way," he said.

The subject of an alternative was however ducked as "the subject of another lecture, perhaps in another lifetime."

Two micron geometries claimed

THE magic figure of under 2 micron geometries in semiconductor manufacture has been achieved in a standard 8-bit microprocessor by NEC-Toshiba Information Systems in Japan.

In fact, engineers at the company have been involved in producing a shrunk version of the device from its standard 4 micron geometries down to 2.8 microns. This involves photographically reducing the mask set used to manufacture the device, and is a common technique in the industry.

In carrying out this work, however, internal channel lengths in the micro have been reduced to 1.5 micron.

Though the company has declined to state which microprocessor has been shrunk in this way, it has indicated that it uses the instruction set of a common device. As Toshiba itself produces the 8080A commercially, it is quite possibly this micro on which the work has been done.

Performance of three Intel packages doubled

THE performance of three software products used in developing 8080/8085 microcomputer programs has been doubled by Intel.

They are Version 3.0 of the 8080/8085 Macro Assembler, and the Link and Locate packages of the Isis-II disc operating system used on the company's Intellec Development System.

The new Macro Assembler allows program assembly in half the time formerly required by translating assembly language mnemonics into relocatable object code modules.

This allows program addresses to be referenced with symbolic names and makes it easier to modify programs. It also allows similar sections of source code to be written only once.

The improved Link package speeds the combination of code written in any of the languages available on the Intellec system, including the Assembler, PLM/80 and Fortran/80.

The speed improvements have also been carried through to the Locate package, which is used to convert relocatable object modules to an absolute memory format for execution in the microprocessor.

Scope of DiY show extended

REFLECTING the shift in microcomputer thinking and potential, the Do It Yourself Computer Show has been extended beyond the hobbyist to address the use of microcomputers by businessmen of all kinds.

To be held at the Bloomsbury Centre Hotel in London, from July 5 to 7, it will combine an exhibition of relevant systems with a series of seminars covering both business and personal use. Further information can be obtained from Online Conferences, Cleveland Road, Uxbridge.

Users to get fruits of Apple's software labours

VOLUMES three, four and five of the Apple Computers Software Bank have now been issued by the company, together with a manual providing detailed descriptions and operating instructions for each of the programs carried.

The majority of the programs carried in the new volumes have been provided by users of Apple II computers, and include File Cabinet, a personal directory and record keeping system; Character Generator, a program to label high resolution graphic images; and Integer Basic Renumber/Append. In total, there are 25 user supplied software packages.

Also included in the new issue are two games from Apple. One, Microchess, is available under licence from the Personal Software Company, while the other, Apple Bowl, creates a simulation of ten-pin bowling.

The manual that accompanies the three new volumes is called the "Bonus Issue". It carries extensive documentation on the new programs, and is partly intended to help establish good programming techniques among users.

The user contributed programs from the software bank should be available from most Apple dealers, with users supplying their own blank diskettes or cassettes for copying the programs.

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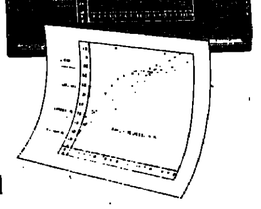

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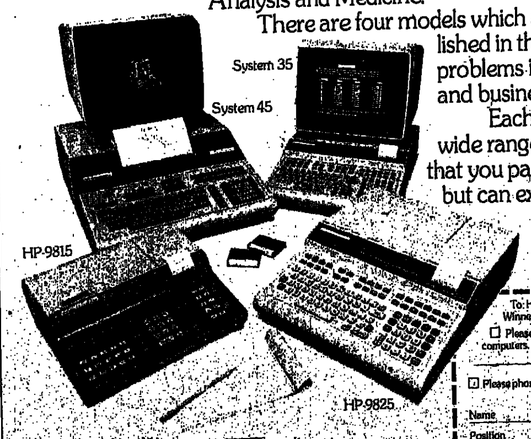

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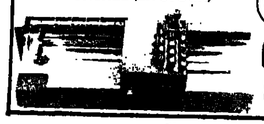

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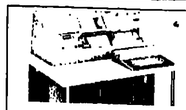

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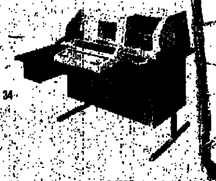

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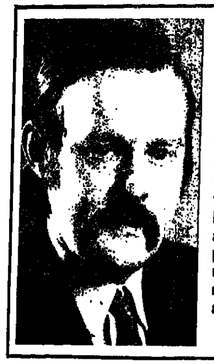


LAST week we carried an article outlining the various computer performance measurement techniques a DP manager can adopt. Now Nicholas Enticknap (pictured left) follows up with a report of the experiences of four users who conduct regular performance assessments.

By Nicholas Enticknap

IT is always a good idea when evaluating any new technique or product to get in touch with a few existing users to get the benefit of their experiences. With that in mind we contacted four installations which have in various different ways made use of performance measurement techniques.

The Bank of England serves as a good model of what can be achieved with the methodical approach. Two years ago, a decision was taken to set up a planning and performance group as a separate entity within the central software function. The group's brief was to accept responsibility for performance measurement and capacity planning functions, and also to investigate any new software which might be of value to the bank.

In this case the installation management already recognised the value of performance measurement. The effort put into it, however, tended to be rather sporadic, as the software staff were constantly being diverted on to whatever was the installation's most pressing development effort at the time. As a result they decided to form a dedicated group of three specialists.

This group approached their work cautiously, doing a careful evaluation of the hardware and software monitors available, and attending an Ecoma conference to find out what other people thought. They concluded that the best answer for the bank's particular circumstances was the purchase of a software monitor.

The installation is medium-sized, with a configuration based on a two Megabyte IBM 370/158 and a two Megabyte 370/148, and a workload consisting of a mix of batch and online applications.

The performance group now does a regular in-depth investigation of the installation's performance about twice a year; each one takes three or four weeks to complete. In addition, a week-by-week analysis is performed. The data accumulated from this work is used both for tuning and for future capacity planning.

The emphasis of the work is on looking at where the CPU time goes. An important ratio studied by the bank is that between program time and CPU time; over the past two years this has shown an increase of about 10 per cent.

The results of the studies are followed not just by the technical staff, but by the installation management as well. They take an interest in the trends depicted by the figures, and follow indicators such as the number of unscheduled IPLs, the proportion of jobs on IMS meeting target response time, and so on.

To summarise the efforts of the performance measurement team so far, the group have converted what was a random function into a planning function, which is in itself a desirable achievement.

Another medium-sized installation which has adopted a rather different approach is Freight Computer Services, which runs a computing facility for the National Freight Corporation. The company set up a technical support operation a year ago to serve an installation based on dual Honeywell 66/10 processors.

The motivating factor here was the difficulty that had been experienced in predicting hardware growth. This led to a decision to formalise the capacity planning operation. The initial emphasis was on software monitoring, but a few months ago the company decided to commission a study from an independent consultant, using a hardware monitor.

As Keith Batt of FCS puts it: "It seemed unprofessional not to be sure that the system was performing as we'd hoped. In fact, the study proved more or less what we'd expected from the software monitor."

This does not mean that the effort was not worthwhile. "The study cost £10,000, but it was well worth it to make sure we'd avoided making any wrong decisions. It was also valuable as a brain-picking exercise; our aim is to make ourselves self-supporting.

"We're not planning to use a hardware monitor on a regular basis, only when anticipating major changes, and then we'll rent one. At the moment we're in the process of writing a more comprehensive software monitor as a result of what we've learnt."

Alan Knight has more experience of performance measurement than most, having been introduced to the techniques nearly 10 years ago. For the past four and a half years he has been working with the Royal Bank of Scotland, an IBM user which like many others has had a rapidly changing hardware environment.

When Knight first joined the bank the installation comprised an IBM 370/155 and a 360/50; now the hardware is based on two 370/158 APs and a 3032. During the same period teleprocessing systems have been introduced, and they are all now thoroughly integrated with one another.

As Knight says, that kind of operation puts a premium on reliability, and the best way to achieve that is to resolve performance problems before they reach significant proportions. This requires constant vigilance, as well as considerable expertise to interpret the results obtained. In the bank's case, Knight says that they have achieved excellent results, resolving all sorts of problems which were anything but obvious.

The bank's measurement work is all software based, using quite a lot of different packages. No matter how good they are, says Knight, none of them is ideal, so you need an in-house staff.

ONE user which does have a hardware monitor is British Leyland, which uses a Tesdata MS88. This was acquired in the context of a decision to centralise DP operations from five or six different data centres into a single centralised site. This, as might be imagined, was a highly complex operation, but the corporation achieved its target conversion dates ahead of schedule, according to British Leyland's Clive Tristram.

Tristram said: "If you're seriously into making money out of DP you've got to get into performance measurement," and gives examples of how the monitor facilitates fine tuning. The MS88 comes with a real time graphics display which enables the operators to take in at a glance the state of the system.

The display might show, for example, that the CPU is being used 100%, the supervisor is similarly working 100% of the time, while one channel is being used 40% and the rest are idle. This would indicate a supervisor loop, and the operator would re-IPL the job.

Another way in which the British Leyland monitor has proved valuable is with the disc systems. As each disc controller can be accessed by up to four months' work, British Leyland reduced the spread to within 15%, with the least used being occupied 10% of the time and most used 25%.

COMPANY NEWS

27% profit increase for Sperry

SPERRY RAND, whose subsidiaries include Univac, reported a massive 26.9% increase in profit over its previous financial year which ends on March 31. The figures were $224.1 million compared with $176.5 million.

Sales of $4,179 million were 14.5% up on the previous figure of $3,649.4 million. Fourth quarter figures were $89.3 million profit on $1,165.8 million sales. This was a 16.8% increase on the comparable quarter's figures of $59.4 million.

Perkin-Elmer upped its sales by 26% for the third quarter compared with the previous financial year. Profits were $13.1 million on $189.2 million sales compared with $9.4 million on $150.6 million in the previous period. This also represents a 40% increase in profits.

An increase from $14,736,000 to $16,175,000 for the first quarter of 1979 over the same period last year has been reported by **Modular Computer Systems**. However, net profits were down at $996,000 compared to $1,139,000 in 1978.

Digital Equipment sales for the quarter up to the end of March were $465.9 million compared with $474.8 million for the same quarter in 1978. Profits before tax for the comparable quarters were $79 million and $59.2 million respectively.

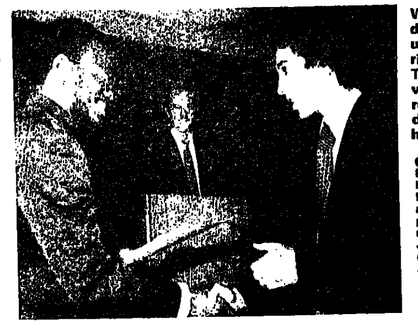
Sales figures for the two quarters were divided into equipment sales of $355.9 million ($295.4 million in 1978) and service and miscellaneous sales of $110 million ($79.3 million in 1978).

Computer Sciences accounts for the year ended March 31 stated sales of $343.2 million with a profit before tax of $34 million. Comparable figures for 1977/78 were sales of $277.2 million and before tax profits of $26.3 million.

The profits for the fourth quarter were reduced due to a $1.9 million charge resulting from the withdrawal of its employees from Iran.

Four-Phase Systems reported sales of $40 million and profits before tax of $5.1 million for the quarter ending March 31. The comparable quarter in 1978 had sales of $29 million with before tax profits of $3.6 million.

Breaking the barriers of apartheid



WHENEVER South Africa is discussed most people take up positions behind the barricades. Here LAURA TATHAM gives a personal view of the progress the republic is making to break down the barriers of apartheid.

● Our picture shows Chief Gatsha Buthelezi, chief minister of Kwazulu, presenting a diploma to Peter Onay, one of 32 students of all races who successfully completed ICL's second and third technical training courses. Watching is John Brett, manpower development manager for ICL (South Africa).

"WE recommend the adoption by all companies in the private sector of a Code of Employment Practice that will eliminate discrimination based on race or colour from all aspects of employment, including selection, promotion, pay, fringe benefits of all kinds, and training. This Code must not remain as pious words but must be a true instrument of change."

This is the gist of a statement that anticipated by nearly two years the South African Government's announced intention to end job apartheid.

Its joint sponsors were SSACOLA, the South African employers' federation and the Urban Foundation — a body dedicated to improve the quality of life for all non-whites which is supported by substantial subscriptions from more than 100 large and influential local companies. The Code has been generally well accepted and is being actively implemented, according to a recent Foundation news bulletin.

Enlightened self-interest has put the major computer companies in the vanguard of the movement. For they are faced by an acute shortage of technical skills that threatens their development in a wealthy, sophisticated and expanding market. Well aware that white resources are inadequate to meet their needs, they have stepped up their effort to mine the rich seam of unexploited non-white talent.

IBM, for instance, will spend more than $3 million on black education during the next three years, according to its 36-page "Special Report on South Africa" published late last year.

One project involves co-operation with the American Chamber of Commerce in South Africa and other US businesses to fund a five-year commercial high school for 600 students. This will also provide adult evening classes in Soweto and act as a community centre.

Sperry Rand, parent corporation of Sperry Univac, in February 1978 announced a programme of "affirmative action" in support of the Six Point Plan. The action covers multiracial in-house training in literacy and in supervisory, clerical and workshop skills and will include financing attendance at external courses.

As far back as 1973, Burroughs was employing a significant proportion of non-whites without discrimination in a variety of jobs. It has continued ever since to expand the scope of that programme.

"One misconception IBM helped to blow sky-high is that some blacks whose cultures never included the use of mathematics, while able to fix machines, would probably not understand programming," says the company's "Special Report". The failure of its early attempts to teach Cobol to blacks was found to stem solely from lack of sufficient opportunity for hands-on experience.

The ambitious, comprehensive technical training scheme that ICL has now operated for over a year has also proved beyond doubt that a white skin is no prerequisite for successful computing, either in-house or on customer sites.

"Without the five 'graduates' from our multiracial training school we would never have got our Protea project off the ground," I was told by John Theobold, internal systems manager for International Computers SA (Pty).

Protea is the specification and design phase of a complex online system which will keep tabs on hardware allocation and order progress and will eventually be used company-wide.

"It is parent board policy to employ, in management as well as technical positions, nationals of all the countries in which we operate," I was reminded by John Starkey, ICL's managing director in South Africa. "The fact that, like everyone else, we're badly short of skilled people is a further incentive. Don't imagine, though, we're in this for charitable reasons. We're determined to increase our present 34% market share (IBM has 33%) and this implies using only people who are at least as competent as any we employ in Britain."

"Personality is an important as technical ability, specially for those who will be working directly with customers," said John Brett, manpower development manager, architect of the multi-racial training programme and himself a South African, taking up the story. "Aptitude is only one of the wide range of assessment tests we use. Standards are never bent.

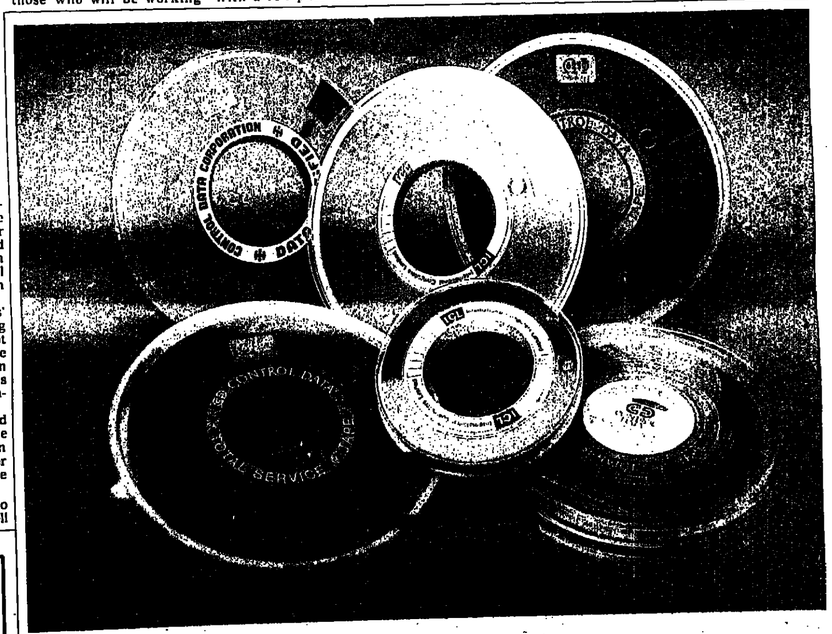
"For the first three courses we had a total of nearly 4,000 applicants," Brett continued. "Of these, we tested 842; 213 did well enough to go forward for personal interview; and 75 were accepted. Seventy-one of these completed the course, 10 dropped out or failed; 65 graduated. With a 91% pass rate — all examinations are both set and marked by line managers — we believe our selection parameters are valid."

Only the number of whites was atypical, for it included four deaf mutes of whom three were not on the ICL payroll. Eight of the 36 are computer science graduates; six have relevant degrees in other disciplines; eight are undergraduates; the remainder are educated to matriculation or HNC standard.

Three are destined for Unilever, itself a pioneer in non-white training in artisan and management skills but which sends some trainees to ICL. Two will go to Indian Affairs.

Twelve graduates from previous courses are now working in various African territories. The others have been absorbed into ICL jobs that range from customer support to software design and the tailoring of package programs for local users.

The big question must be whether integration really works in practice. During my stay in South Africa, I took fullest advantage of many opportunities to mix socially, and unInhibitedly to question (without eavesdropping) men and women of every race. Alert to detect any sign of social strain, I could discover only total "colour blindness".



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SPERRY UNIVAC COMPUTER SYSTEMS

SPERRY UNIVAC IS A DIVISION OF SPERRY RAND LIMITED

BICC's Helen Little fights it out with Woolworth's Lindsay Kenworthy in the Ladies hockey dribbling competition.

The Ladies' 800 metres steeplechase proved a popular venue with male supporters at the water jump. The object, though, was to get over with dry feet.

Spark of success for powermen

BRITISH Nuclear Fuels and Manweb powered through to the final of Computastars when they left the opposition behind with margins of 12 and 17 points respectively in the North-west heat.

Held at the Kirkby Sports Stadium, Liverpool, on Sunday, the 22 Mens teams were put into four groups with the winners going through the the heat finals.

As a result of ties, 12 teams made it with Manweb, the local electricity board, being the overall winner with 170.5 points and are pictured below. The events were discus, standing long jump, soccer penalties, short sprints and 200 metres sprint.

The Ladies will be represented by the British Nuclear Fuels team from Warrington (pictured below) who beat the Midland Bank North-west Computer Centre's team into second place with 132 points.

Eleven Ladies teams entered and the winner was decided from the team with the best placings in seven events. These were: shot putting, standing long jumps, throwing a cricket ball, netball shooting, dribbling a hockey ball, short sprints and the 800 metres steeplechase (pictured above).

Evens in the Mens finals were: shot putting, dribbling a soccer ball, dribbling a rugby ball, squat thrusts and the 800 metres steeplechase. There was a secondary competition for runners-up in Round 1.

In the individual events, the Men fought a close battle with fractions of a point being used to decide placings in the final line-up. However, this did not stop Mike Guest of Littlewoods and Roy Watson of Woolworths tieing on 43.67.

In the Ladies individual events, the final placings were clear cut with Maureen Dooley beating Michelle Probert into second place.

Baldry

Barrie steps into breach

THE old Army saying about not volunteering for anything did not apply as far as Unilever Computer Services Ltd's Barrie Baldry was concerned. Barrie, who had just flown in from Hamburg, was looking forward to a relaxing afternoon watching the competition. But on hearing that there was a shortage of marshalls, Barrie promptly volunteered to act as starter for the races.

Splash of colour on day's events

HIGHLIGHT of the day's competition must have been the steeplechase events which, at times, bore more relation to scenes from Monty Python than events run under the AAA rules.

In particular the Ladies 800 metres proved a popular diversion for the men who crowded round the water jump. The object, in theory, was that the competitor should get over without getting her feet wet. At least three of the ladies just went over regardless, causing ripples on the water.

In the Mens 800 metres steeplechase, one of the runners turned the tables on his detractors. The competitor, who was too shy to identify himself, fell in and promptly started to splash water over those laughing spectators who couldn't run away fast enough.

There are just two more heats to go before the finals on Saturday September 29. The East Anglian heat will be held on Sunday, June 10 at the University Athletic Ground, Milton Road, Cambridge and there are 19 teams competing.

The Copthall Stadium Barnet is the scene for the big North Thames heat on Saturday, June 30 with 47 teams fighting for honours.

Computastars is sponsored by Computer Weekly in conjunction with Wright Air Conditioning

TEAMS

Mens: Allied Bakeries I and II, Liverpool, BICC, Liverpool; British Nuclear Fuels, Warrington; Data Logic, Manchester; Fraser Williams & Co I and II, Manchester; Gemini Computer Services, Manchester; ICL (Local Govt), Liverpool; Initial Services, Manchester; Littlewoods, Liverpool; Liverpool Post, Liverpool; Management Control Systems, Manweb, Manchester; Midland Bank (NWCC), Bootle; Perkin-Elmer Data Systems I and II; and, Woolworths, Rochdale.

Ladies: Allied Bakeries, Liverpool; BICC, Liverpool, British Nuclear Fuels, Warrington; Data Logic, Manchester; Fraser Williams & Co, Manchester; ICL (Local Govt), Liverpool; Littlewoods, Liverpool; Liverpool Post, Liverpool; Manweb, Manchester; Midland Bank (NWCC), Bootle; and Woolworths, Rochdale.

RESULTS

Ladies team events: 1 British Nuclear Fuels, 132 points; 2 Midland Bank, 120.5; 3 Woolworths and Liverpool Post 116.5 each; 5 Littlewoods, 6 Data Logic and 7 BICC and Allied Bakeries (joint placing).

Ladies individual events: 1 Maureen Dooley, Midland Bank, 54 points; 2 Michelle Probert, British Nuclear Fuels, 51; and, 3 Lynday Kenworthy, Woolworths, 49.5.

Mens team events: 1 Manweb, 170.5 points; 2 Management Control Systems, 153.2; 3 Midland Bank, 153; 4 Littlewoods II; 5 Data Logic; 6 Littlewoods I; 7 Woolworths I; 8 Initial Services; 9 Inland Revenue; 10 Gemini Computer Services and Woolworths II (joint placing); and,12 BICC.

Mens individual events: 1 Mike Guest, Littlewoods II and Roy Watson, Woolworths I, 43.67 points each; 3 L. Wise, Management Control Systems, 39.2;and,4 Emyr Jones, Manweb, 38.5.

LEFT — twas the luck of the Oirish for Maureen Dooley who pipped Michelle Probert for the Ladies individual competition. Maureen, who works for the Midland Bank's North-west Computer Centre at Bootle, finished on 54 points while Michelle, who works for British Nuclear Fuels at Warrington, had 51.

RIGHT — the Manweb Mens team were clear winners in the team events on Sunday. They clocked up 170.5 points with second placed Management Control Systems on 153.2. The team — Paul Davies, Joe Norris, Emyr Jones and Mike Edwards — go through to the finals.

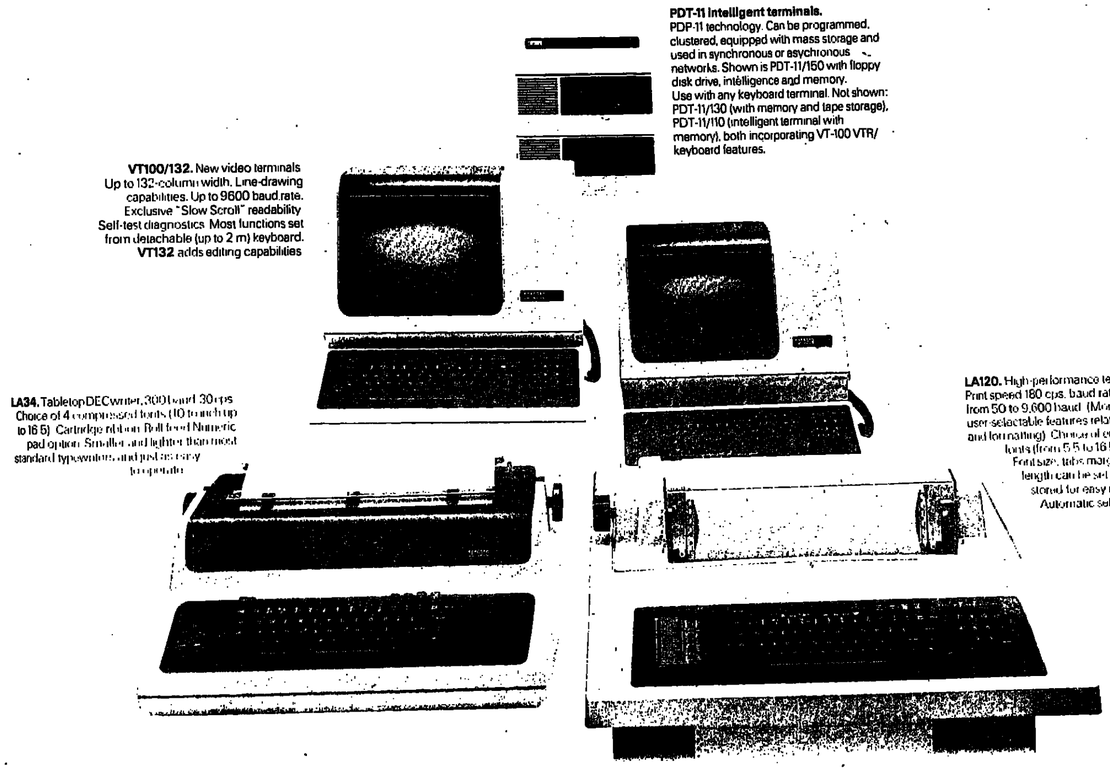
In the individual events Emyr, who works in Manchester, came fourth with 38.5 points.

LEFT — British Nuclear Fuel's Ladies team also takes the trip to Crystal Palace in September. The team — Mary Martin, Michelle Probert and Julie Wiszowaty — amassed 132 points with the Midland Bank trailing in second place on 120.5.

RIGHT — Freeland counted throughout the Mens individual events at Kirkby as the results were slow. This did not prevent Mike Guest (left) of Littlewoods losing with Woolworth's Roy Watson on 43.67.

NEW TERMINALS FROM DIGITAL EQUIPMENT

In technical terms, they look very good...



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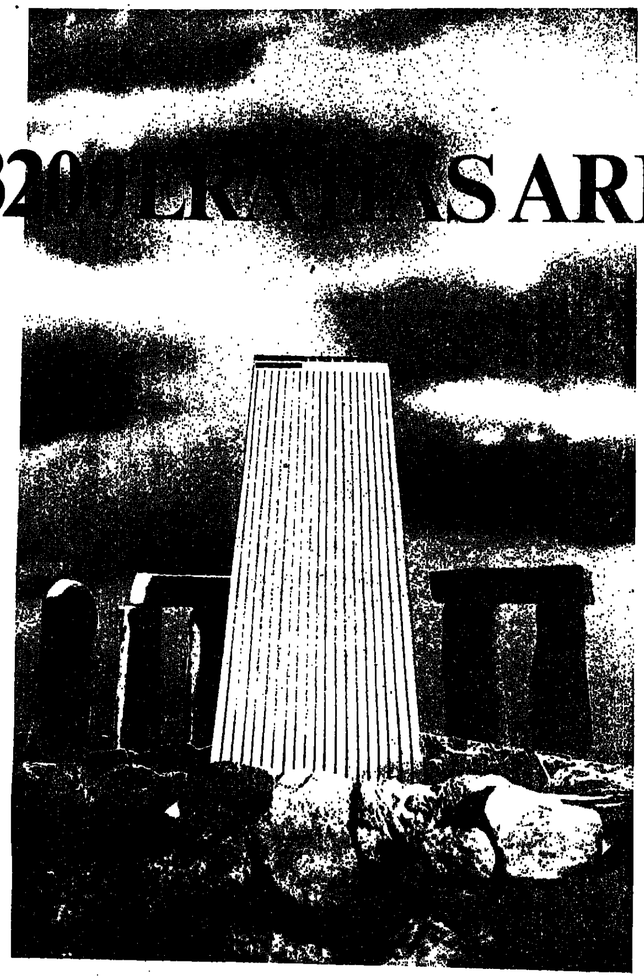

Perkin-Elmer opens the next chapter in computing history. With the introduction of the Model 3220 — first processor in the new Series 3200 — the second generation of SUPERMINIS makes its historic UK debut.

Highest Performance

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With all these features and many more, the Model 3220 costs less than many currently available 16-bit systems, a major cost breakthrough. For the first time, this brings within economic reach of a wide range of users the speed, accuracy, power and I/O handling capacity normally associated with 'mainframe' computers.

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To match the most advanced hardware, Perkin-Elmer 32-bit software has been refined and proven where it counts — in the field. This powerful software includes OS/32, a real-time, multi-tasking operating system, together with a host of language processors and utilities, including COBOL, globally optimising FORTRAN VII, BASIC, CORAL 66, ITC transaction monitor and OS/MTM for multi-terminal program development facilities.

The 3200 Team

Perkin-Elmer, a Fortune 500 company, is world-renowned as a major manufacturer of high-technology optical, instrumentation and data processing products. The Model 3220 SUPERMINI is the latest evolution in the company's commitment to industry leadership and innovation. It is backed by years of field experience, fully-proven software and a team of dedicated professionals committed to making your installation a success.

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The successful candidate will perform a key role, offering a sound IBM DOS and COBOL technical background, with responsibility for enhancing software technical development within the installation.

Experience of CICS and DL/1 is a valuable asset. However the person appointed can look forward to receiving training enabling them to strengthen their technical knowledge.

A varied career is offered moving either to a more commercial systems and programming position or to further enhancement of the technical role.

The Company is a household name in the home entertainments industry and is a fast expanding member of an international group. The benefits package is very competitive and includes a substantial discount on company products and a pleasant working environment. The excellent salary offered is an indication that this position will provide a real career move for the progressive-minded programmer.

Ref. NW2/0706/CW

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The installation works to high standards and encourages the use of the latest techniques for which formal training is provided.

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The Company operates a medium-size IBM installation with an on-line network. Conditions of employment and opportunities of career advancement are excellent. A first-class commencing salary will be offered.

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The Company offers good conditions of employment and a rewarding career path leading to main line management.

Ref. E1/0706/CW

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Candidates should have a sound operating background using IBM System 3 equipment and ideally have experience of working in a multi-programming environment using CCP utilities.

The company provides computing facilities for its outlets throughout the UK and Europe, and this position offers the opportunity of career advancement within a rapidly expanding organisation.

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or write to:

ATA Computer Recruitment
Anglia House, 24/26 Frederick Street, EDINBURGH EH2 2JR

ALL APPLICATIONS WILL BE PROCESSED IN STRICT CONFIDENCE. IF INVITED FOR INTERVIEW ALL TRAVELLING/HOTEL EXPENSES WILL BE MET IN FULL

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We have vacancies at the levels of

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PUT SOME LEISURE INTO YOUR CAREER

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Both a Senior Analyst and Systems Analyst are required with upwards of two years systems experience gained in a commercial sphere. Involvement with financial or on-line systems would be a decided asset. In return the Rank Organisation can offer you a challenging position developing systems for Butlin's, Pinewood Studios, or Central Services.

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A good COBOL programming background allied to sound analytical skills could well gain you a senior position either with Butlin's Marketing Systems or in the Rank Leisure Services project team.

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The senior position of **PROGRAMMER DEVELOPMENT SUPERVISOR** has recently been created to implement the Systems Design Philosophy coupled with the training of programmers. If you have a minimum of 4 years COBOL gained with IBM 370's, and are a good communicator — then this is an excellent career step for you.
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These are all superb opportunities for you to put some leisure into your career and be well rewarded for your skills.
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Leisure is no longer simply a relaxation — today it is a major growth industry bringing to so many more people the opportunity to enjoy the fruits of their labours.
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The work is interesting and varied, helping to solve problems for a wide range of leisure companies such as Rank Audio Visual, Butlin's, Top Rank Clubs, Rank Hotels.
The working environment is first class and includes:—

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- * **USE OF COMPANY CARS**

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Ext.
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: packages worth up to **£35,000 p.a.**

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SYSTEMS ANALYSTS
around £11,000

TAX FREE

+ Bonus
+ Car Allowance
+ Fully furnished apartment
+ Schooling and Travel Allowance

KUWAIT has a hot but acceptable climate. Many facilities are available, including sports centres, English T.V. and reasonably-priced restaurants. The large ex-patriate country is socially active, there being theatre groups and frequent parties. Costs of food and household items for a family of 4 could perhaps amount to £3,000 per annum, including sometimes eating at restaurants, and there are few other essential costs. The apartments are built and furnished to a high standard.

THE COMPANY: Our client is a long-established and successful agent in the Gulf area for many major Companies, including Caterpillar and Volvo. As one of the largest organisations within the private sector in Kuwait, they offer secure employment and a most attractive remuneration package. This includes travel facilities which enable children educated in the U.K. to spend school holidays with their families. Local education is good up to the age of 11. The current DP Manager has decided to return to the U.K. after establishing a highly effective dual-processor, Burroughs 1728 computer installation during his 4 years in Kuwait. This equipment is currently used to handle parts inventory, with on-line enquiry facilities, and it is planned to develop further new systems in the near future. The Company therefore wishes to find a replacement for the DP Manager and to expand the DP Department by recruiting two additional Systems Analysts or Senior Analysts.

D.P. MANAGER

Responsibilities:
To manage all aspects of the current functioning and further development of the Data Processing Department and the service it provides, controlling 18 staff.

Required Profile:
Candidates who have spent less than eight years' in DP are unlikely to have the required depth of experience, which will include DP or Systems management and a good background in systems development and implementation. Knowledge of data communications would be useful.

SYSTEMS ANALYSTS

Responsibilities:
To handle all aspects of the development and implementation of computer systems, which may include some involvement in programming.

Required Profile:
1. 2 years' programming experience, including good COBOL
2. Experience on disc-based systems
3. Good systems background, including responsibility for the development and implementation of a medium-sized system.

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Systems Analysts & Programmers
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Our client has recently won a £multi-million contract to provide a radar and flight data processing system to cover the Austrian flight information region.
The project is based on DEC computers using distributed real-time processing, communications and sophisticated peripherals.
Several opportunities exist to join the team in Vienna in this absorbing and creative work. Contracts are for a minimum of 2 years and around 4-7 years real-time software experience is desirable.
The package consists of a highly competitive salary together with attractive relocation conditions and such benefits as free education for children and free medical insurance.

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Please write, giving a brief career history to David Macmillan, Personnel Advertising Limited, 22 Red Lion Street, London WC1R 4PX. All replies will be sent forward to our client unless we are instructed otherwise. Please quote ref. SR553B.

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Our client, the Ministry of P.T.T. Riyadh, urgently requires following personnel for IBM 3031 computers:

- **SYSTEMS ANALYSTS £27K P.A.**
  Min 5 yrs.' exp. in computer systems work
- **COMPUTER OPERATORS £20K P.A.**
  Min 3 yrs.' exp. as Computer Operator
- **UNIT SUPERVISORS £20K P.A.**
  Min 3 yrs.' exp. in data processing to include one of the following fields:
  (a) Scheduling on I/O control
  (b) Job set up or production control
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Above salaries are maximum depending on experience and qualifications.

Please ring 01-801 4321. **Sheikh Hesham Overseas Personnel Ltd.**, 8 Welton Road, London N7 8PP.

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UK and abroad **UK salary up to £12,000 + bonus**
Generous overseas allowances

OUR CLIENT is a major software house within the British Computer Industry who continues to achieve both substantial annual expansion and increasing profit. Specialised, and highly skilled, professional attitudes are maintained at all levels within the organisation.

THE POSITIONS need mature, experienced individuals who can maintain and enhance an excellent reputation, whilst providing the qualities essential for leadership of project personnel within revenue objectives. Specialist areas include applications knowledge of the Oil Industry, nationalised industries and public corporations or experience of the development or installation of large operating systems.

APPLICANTS should be specialists in their particular areas and capable of ensuring that the resources of the company are made available to clients in an effective and efficient manner as well as demonstrating significant measurable achievement over the last two years.

FOR THE appropriate candidates, terms will not be a major obstacle.

Write in confidence quoting CW 602 to John Hodges – Adviser to the Company

peterson davidson ltd
3 Mandeville Place, Wigmore Street, London W1M 5LB 01-486 8901

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A key element of this planned growth is the appointment of a sales executive, based in the company's new offices in

London

to take over complete responsibility for sales of the Regent 300 and ADDS System 76, to OEM Distributors and National Accounts throughout the UK. **This is a new appointment and represents an outstanding career opportunity for a salesman who is capable of operating independently.**

We are seeking an experienced sales executive with a proven record of sales success. Alternatively, we will consider applications from

Sales Support Analysts

with experience in pre-sale support of small business systems wishing to move into selling.

Total income package of

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Please contact Bernard Conn or Caroline Connabeer quoting reference ADD062.

SMR Sales & Marketing Recruiters Ltd.,
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IMS
London + E.E.C.

A major International Systems and Software Group with offices in London and throughout the E.E.C. are expanding their already sizeable project teams in the IMS applications field.

Our client is seeking experienced IMS (DB and DC) **Consultants, Analysts, Analyst Programmers, Programmers and Systems Designers** with backgrounds in the areas of Financial, Banking, Stock Control, Order Entry and similar applications. The programming languages in use are COBOL, PL/1, MARK IV and Assembler.

Successful applicants will receive well above market salaries in addition to a Benefits package commensurate with a prestigious International group. The fluidity of middle and upper management ensures excellent advancement prospects.

Interviews will be held in London as soon as applications are received and offers will be made within 7 days.

£10K+

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Tel: 01-491 4636
Telex: 28800 Londof G.

Internal Consultants
Computer Systems Audit/Security
London based, to £10,500 + car

These vacancies arise through promotions within a function recognised as providing excellent and varied prospects of career advancement. Our client is a multinational manufacturer and distributor of business equipment and supplies. Successful candidates will be members of an internal consultancy team providing international management at all levels with a professional appraisal of operations methods and an assurance of the integrity of current systems. Candidates, probably 27-35, must be graduates with at least 3 years in EDP systems management, ideally with IBM equipment. A full understanding of business problems associated with large scale systems development is vital. For one of the vacancies experience of security technology is preferred. There is about 30% travel, mainly overseas.

N.P.S. Lilley, Ref: 22134/CW.

Male or female candidates should telephone in confidence for a Personal History Form to:
LONDON: 01-734 6852, *Sutherland House, 5/6 Argyll Street, W1E 6EZ.*

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At 42nd Street and 2nd Avenue on the 17th floor another link in the Atlantic Alliance was forged this week when Logistix took up residence in their New York offices.

We have some major assignments on the East and West coasts and the Mid West for Analysts, Programmers and Systems Designers. If you would like to join one of our client's project teams on a 1–2 year assignment you should offer: a) 2–6 years solid technical experience involving design, programming and implementation. b) Ability to operate in a disciplined environment involving a systems design methodology. c) Experience of either O.S. COBOL, IMS + TSO or System 34 distributed processing linked to a large Main-frame.

Single status is perferable. Initial accommodation costs and return air fares will be provided in addition to a substantial completion bonus. Interim return air fares will also be paid as well as Blue Cross and Blue Shield medical insurance premiums.

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This small London-based team is responsible for six computer installations located in major cities throughout Europe. The team provides technical support to these installations on a planned and trouble shooting basis. Responsibilities also include, future hardware evaluation, computer performance evaluation, software evaluation and the co-operation of systems software enhancement. Experience in Operating Systems is extremely important and any knowledge of mini-computer systems would be useful although by no means essential. In fact candidates with a good knowledge of computer systems software could find these positions extremely interesting with a wide and varied range of responsibilities

The positions offer an excellent income package, coupled with a progressive promotions system, based on merit. European travel will form an integral part of the job but would not be in excess of 10% to 20% of the time. It is also relevant that the organisation offers an outstanding package of fringe benefits.

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IRP Information Processing People
58 Pembroke Road, London W8. Telephone 01-603 7335/6 Telex: 26298
Computer Services & Recruitment Consultants

COMPUTER OPERATIONS SUPERVISOR-MANAGER/ESS

We are an old-established group in Shopfitting, Architectural Metalwork, Jewellery Services and Industrial Doors.

We have completed Stage II of our Burroughs B.800 installation and have been live on B.M.S. order processing for 15 months and Cobacs III for 5 months. We have CMS fixed desk on order for delivery later this year and we need a computer room supervisor to take over the day-to-day control of the computer room and to see in CMS under the control of the Chief Financial Controller. There is a computer room staff of four.

Ideally you should be used to working with Burroughs hardware and software and dealing with the day-to-day problems of both. There is plenty of scope for advancement as our "pencilled-in plans" envisage an on line processing of our Bristol-based companies data next-year.

Benefits include 4 weeks' and 2 days' holiday, pension scheme, free life assurance, sick pay scheme, travel allowance and subsidised canteen. Salary is negotiable as we are prepared to pay the right price for the right person.

Please write, giving details of career, salary, etc., to:

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Assistant to Group Computer Controller

This post, in a major diverse international Retailing Organisation offers a complex technical and personal challenge to a highly motivated and intelligent graduate.

The work involves advising the Group's Parent Board and the Directors and Staff of Subsidiary Companies on matters concerning computers, telecommunications, office automation, micro-processors, systems, software and equipment acquisition and financing strategies.

Applicants of either sex, between the ages of 24 and 32, should possess a science degree and ideally have written tele-processing software for mini/micro computers in a commercial environment, and should now be interested in extending and applying their skills and experience in a profit-conscious organisation.

Adaptability, good communication skills, perseverence and the ability to work successfully either singly or as part of a team are more important than paper qualifications.

Salary will be negotiable around £6,000 p.a plus Company car and large Company benefits, including subsidised restaurant, B.U.P.A., 4 weeks' holiday, etc. The position is London based but substantial travelling is involved. Assistance with relocation will be given where appropriate.

UNIVERSITY OF EDINBURGH
DEPARTMENT OF COMPUTER SCIENCE

1 LECTURER
1 COMPUTING OFFICER

Applications are invited for a post as LECTURER in the Department of Computer Science. Specialisation required: hardware design and implementation. Salary scale from October 1979: £4333-£8902 (plus superannuation), with placement according to age, qualifications and experience. The vacancy is available from 1st September, 1979, but the appointment could be delayed into 1980 to ensure the right candidate.

Applications are also invited for a post as DEPARTMENTAL COMPUTING OFFICER to develop and maintain departmental software. Some hardware experience an advantage. Salary scale from October 1979: £4333-7821 (plus superannuation), with placement according to age, qualifications and experience. The successful candidate will be asked to take up his post as soon as possible after 1st July, 1979, and not later than 1st October, 1979.

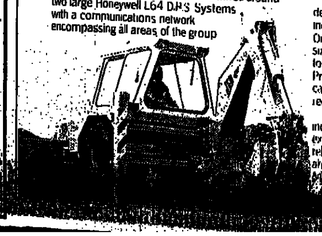
Further particulars of both the above posts may be obtained from: The Secretary, University of Edinburgh, Old College, South Bridge, EDINBURGH, EH8 9YL.

Applications by letter, including particulars under and the names of two

Management Services Manager

JCB, Europe's leading manufacturer of earthmoving equipment, require a data processing manager. His/her responsibility will be to control a department embarking on an ambitious 3 year Development and Implementation Plan.

The D.P. development will be centred around two large Honeywell L64 D.P.S. Systems with a communications network encompassing all areas of the group



Major systems activities include Database using IDS II, shop floor monitoring and control, Real Time Systems, an 80 Terminal Network On-line Order Processing and some overseas responsibilities

The successful applicant will possess a demonstrable record of achievement gained, including Systems Management in an established On line/Real Time environment supplemented by six years in the Computer Industry, and an ability to motivate and control all levels of Data Processing staff. Project Management and Control capabilities are an essential requirement.

Attractive conditions, including generous salary, excellent fringe benefits and relocation expenses to a rural area in North Staffordshire

JCB

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Several senior people are required with experience of multi-processor and system architecture design. A good knowledge of operating systems and associated software features is desirable.

16-bit machines.
Our client requires at least four senior consultants with network design experience and database development on 16-bit machines.

IMS expertise plus TCAM/VTAM
JBA is interested to talk with any senior people with detailed knowledge of IMS administration, installation or generation and maintenance. Also several senior positions are available for TCAM, VTAM, BTAM, or NCP specialists.

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Two vacancies exist for senior word or table processor design specialists who have 8085X micro development experience and an intimate knowledge of latest technology.

Contact: Mike Creamer

COBOL Compiler Designer
£7,500 – £10,000

Berks.
Our client is an equipment manufacturing company with a growing customer base in the UK, Europe and the USA. The company concentrates on commercial applications systems and maintains a specialist software development group responsible for developing the software facilities of the equipment.
Applicants must have experience of compiler design and COBOL and a background in a development environment, preceded by a degree course. The successful candidate will be personable and presentable and eager to enthusiastically contribute to a highly professional development group. Excellent employment package and high salary. **Contact: Mike Creamer**

Technical Sales Support Analyst
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A major mini computer manufacturer is seeking to recruit high level d.p. professionals to assist in the support of government contracts. The successful appointees will possess an extensive software background, with emphasis on database applications. A background involving development of real-time operating systems, communications and programming in Assembler is ideal. There is significant scope for career development with this forward-thinking company. **Contact: Margaret Stevens**

Recruitment Consultant
London W1 **up to £7,000 basic salary plus bonus**

Due to the continuing demand for our professional services, JBA are planning to move to larger premises and therefore are able to expand our small, but highly respected, team with a Junior Consultant.
We are looking for a person with at least three years in the computer industry, probably as an Analyst/Programmer, who has either the experience or potential to become a junior recruitment consultant.
If you would like to discuss the subject further, on an informal basis, then **Contact: Jim Baker**

For further information on any of the above vacancies, please contact the appropriate consultant.
If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.
JAMES BAKER ASSOCIATES, International Personnel Consultants,
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MULTI £M GROUP TO INSTALL IBM REAL-TIME SYSTEMS

Two Management Opportunities — Negotiable Salaries, Cars, Normal Benefits

Our client, is an international, U.K. based group of companies with an annual turnover in excess of £250M. Operating companies are located throughout the U.K. and commitment to expansion is likely to further increase an established European involvement.

The growth and success of the group, has led to a review of data processing policy resulting in a decision to install Real Time Systems based on the latest IBM hardware and software. The existing computer facility, a subsidiary company, will be expanded to meet the increased demand and two key Managers are needed as follows:

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This appointment will provide undoubted challenge, job interest and good career potential. It will appeal to an energetic, resourceful and mature individual, aged 35-45, a Manager used to working within a group structure and with a ready grasp of the business implications of computerisation. Departmental management duties will be widespread and all embracing, whilst previous experience of Real-Time applications is essential based on IBM hardware. A discipline in addition to data processing will be welcomed as the appointment could lead to a board position in the subsidiary company.

COMPUTER OPERATIONS MANAGER

A dedicated computer professional with drive and enthusiasm, is required for this position, probably aged 30-35. A detailed understanding of Real-Time operational problems is mandatory and previous experience of IBM Hardware is expected. This is a key role in developing and building a strong team, which will be able to provide a high level of service to users in a critical area. Apart from purely technical matters, responsibility must be assumed for instituting operational standards, training, advice on hardware budgets, recruiting and staff assessments.

Both of the above positions will be based at our client's headquarters in the Midlands, within easy reach of town, country and moderately priced housing. Salaries will be negotiated at realistic levels, commensurate with the importance of the positions. Company cars are available and relocation expenses will be met where necessary. Please ensure that written applications are in sufficient detail to enable an interview decision to be made.

Positions open to male & female applicants, please telephone (24 hour service) for initial discussion or write to address below. QUOTE REF. CW145-9D

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If you've the experience we're looking for, you'll already know Dataskil is one of Europe's leading software houses. What you probably won't have heard is that we've recently created a General Systems Unit at Wilmslow, Cheshire, to obtain systems, programming and operations business on non-ICL machines.

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The opportunities are enormous. And we mean to exploit them to the full. We plan to build the Unit into a major market force, designed to provide Consultancy studies, general systems and programming, and staff hire across a controlled sector of non-ICL hardware.

How you fit in

We're looking for a dynamic professional with 8-10 years' computer experience of at least one non-ICL mainframe (preferably IBM or Honeywell). You're likely to already be a Project Manager, or with the potential to handle responsibility at this standard, and have had involvement in at least one major project at management level.

Although the Unit is based in Wilmslow, it covers the area North of Birmingham and South of Scotland, and you'll be involved in areas as diverse as planning, marketing, interviewing, staff management, contract negotiations and presentations. At times the hours will be tough and demanding, but if you're looking for something more than a desk-bound 9-5 routine, you'll find the rewards more than outweigh your commitment.

The salary is from £7000 negotiable, with expenses and eligibility for our 1979 Productivity Bonus Scheme.

Ring Henry Cohen, Manager, General Systems Unit, Northern Region, on Wilmslow (0625) 532631 ext. 35, or write to him at Dataskil Limited, St. Ann's House, Alderley Road, Wilmslow, Cheshire, SK9 1HQ. Please quote reference CW1401.

Dataskil LIMITED
The Computer Professionals

City of Manchester — Treasurer's Department

Computer Programming / Auditor

£4,773-£5,568
(including £312 p.a. supplement)

Applicants should be experienced in writing interruption and other programs. Experience in using COBOL would be an advantage. The person appointed will be one of two people employed solely on computer audits. An ICL system 4 - 25 computer is in use which is to be replaced in about two years.

The post offers good working conditions, a 5 day 35-hour week with flexible working hour system.

The City Council operates a Union Membership Agreement under which a new employee is required to become a member of a recognised Union.

Application forms from the City Treasurer P.O. Box 314, Town Hall, Manchester, M60 2JR quoting reference GA/RL or telephone 061-230 3377 (Ext 2676). Applicants requiring further information about the post may discuss them with the Chief Internal Auditor Mr. J. A. Matton on Ext. 2605.

Closing date 26th June 1979.

COMPUTER SERVICES ENGINEER

Bristol Aerojet Limited are designers and manufacturers of rocket motors, rocket vehicles and underwater systems. Against a background of long-term government contracts we are continuing to expand and currently have a vacancy for a Computer Services Engineer.

Duties will include the maintenance of existing computer systems and the development of programmes for new ones plus giving assistance and advice to time sharing terminal users.

Applicants should ideally be between 28 and 35 and have a strong mathematics and computer environment background. A knowledge of statistics would be an advantage.

The Company is pleasantly situated on the Avon/Somerset border a few miles from the sea, the Mendip hills and junction 21 of M5. Working conditions are excellent and salary is negotiable in addition to a productivity scheme is in operation.

Contact: Ron Moir, Personnel Manager, Bristol Aerojet Limited, Banwell, Weston-super-Mare.

WANTED!

PROGRAMMERS

COBOL	Basingstoke, Beckenham, Beckton, Borehamwood, City, Croydon, Edgware, Harlow, Havant, Hayes, Isleworth, Islington, Portsmouth, Southampton, Southwark, N17, SW1.
RPG 11	Bury St Edmunds, Crawley, Greenford, Halstead, Kingston, Petersfield.
ASSEMBLER	Borehamwood, Chatham, City, Epsom, Harlow, Horley, Maidenhead, Slough, Tadworth.
PL/1	Chatham, Chesham, City, Crawley, Dorking, Harlow, Tadworth, Wembley.
Basic	City, Farnborough, Horley, Maidenhead, Morden, SW1.

SYSTEMS — Basingstoke, Beckenham, City, Croydon, Harlow, Havant, NW1, NW9, Southwark, Tottenham.

CONTRACTS

ICL COBOL	South London, City.
RPG II	London, Essex.
PL/1	London, Middlesex.
Systems	City, Middlesex.

REWARD!

Top conditions and rates for conscientious, hard-working professionals. Why not enquire for more details?

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MARTON associates
FOR PROFESSIONAL PEOPLE AT THE CROSSROADS
Suite 028, Cabrid Buildings, Trafalgar Square, WC2
01-839 4169

PROJECT MANAGEMENT, SENIOR CONSULTANTS

E.D.P. SYSTEMS

UK and abroad **UK salary up to £12,000 + bonus**
Generous overseas allowances

OUR CLIENT is a major software house within the British Computer Industry who continues to achieve both substantial annual expansion and increasing profit. Specialised, and highly skilled, professional attitudes are maintained at all levels within the organisation.

THE POSITIONS need mature, experienced individuals who can maintain and enhance an excellent reputation, whilst providing the qualities essential for leadership of project personnel within revenue objectives. Specialist areas include applications knowledge of the Oil Industry, nationalised industries and public corporations or experience of the development or installation of large operating systems.

APPLICANTS should be specialists in their particular areas and capable of ensuring that the resources of the company are made available to clients in an effective and efficient manner as well as demonstrating significant measurable achievement over the last two years.

FOR THE appropriate candidates, terms will not be a major obstacle.

Write in confidence quoting CW 602 to
John Hodges - Adviser to the Company

peterson davidson ltd
3 Mandeville Place, Wigmore Street, London W1M 5LB 01-486 8911

MYRIAD

AMSTERDAM

A major manufacturing organisation wishes to recruit ANALYSTS and PROGRAMMERS to implement both local and international systems on large IBM equipment. The modern offices, situated in one of Europe's most fascinating cities, are well serviced by an efficient public transport system that provides easy access to all parts of Amsterdam.

Full accommodation will be provided by the company and assistance with school fees will be available where necessary.

ANALYSTS — £10,000-£15,000

To assist with the development and implementation of commercial applications the systems analysts will possess a good academic background coupled with four years' or more data processing experience, including formal training in systems analysis and design.

The successful applicants will have two years' programming to their credit (preferably COBOL) and have functioned as an analyst on at least one major project from feasibility to implementation. Team leader experience will be an added advantage.

PROGRAMMERS — £7,000-£10,000

Programmers are required to join project teams developing a variety of commercial systems, in COBOL, on an IBM 370/158 operating under OS.

One position exists for a person with 2 years' dat processing experience, half of which will have been gained in a programming capacity using COBOL.

Applicants with more experience, particularly IBM OS knowledge, will command salaries at the higher end of the range.

Persons joining the company now will be required to stay for a minimum of two years, after which it is hoped they will continue to enjoy the high standard of living offered by our client in Amsterdam.

REF. S1/0706/CW

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 24 HRS.

OXFORD UNIVERSITY COMPUTING SERVICE

The Service runs a large ICL 2980 + 1906A system with extensive communications and graphical equipment. It requires the following staff:

DEVELOPMENT MANAGER
£8182-£10097
Reporting to the Director, responsible for forward planning and for overseeing the Hardware and System Programming sections.

COMPUTER TEACHING OFFICER
£4232-£7145 or £6627-£8452
To teach computing at all levels with particular emphasis on microprocessors.

SYSTEM PROGRAMMER
£3689-£8108 or £4232-£7145
To maintain VME/B and implement minor enhancements.

Salaries will be increased by 6% plus a cost of living award from October, 1979. Enquiries, further details and application forms from Director's Secretary, 13 Banbury Road, Oxford. Telephone Oxford (0865) 56721 for further details.

QUEEN MARY COLLEGE
University of London

DISTRIBUTED ARRAY PROCESSOR SSRC PROGRAMMING AND APPLICATIONS SUPPORT POSTS

The DAP Support Unit is being formed in QMC Computer Centre to foster research on, produce software for and advise users of the ICL Distributed Array Processor. The Social Science Research Council is funding 2 posts in the Unit for an initial period of 3 years

1) to work on basic algorithms in sorting and searching large data sets, and statistical data reduction. Candidates should preferably have a degree and postgraduate qualification in Computer Science, and proven competence in the development and documentation of software. Appointment in range £6886-£8452 p.a.*

2) to act as advisor to Social Scientists wishing to use the DAP. Candidates should have qualifications in either Computer Science or a Social Science and must be experienced in the application of computers to the Social Sciences and the application of large scale data processing systems. Appointment in range £8182-£10097 p.a.*

* plus £502 London Allowance. Salary review due October, 1979.

Application forms obtainable from The Registrar, Queen Mary College, Mile End Road, London E1 4NS, to be returned by 22 June.

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PROBABLY THE WORLD'S FINEST WORD AND FIGURE PROCESSING RANGE.

OFFER SALES CAREER OPPORTUNITIES

Data Recall Limited, which designs, manufactures and markets the all-British DIAMOND Range of Word and Figure Processors continues its planned expansion programme with new Sales Offices in Dorking, Birmingham and Harrogate.

Career opportunities for *additional* Sales Personnel, particularly in London and the Home Counties have arisen, offering high income for experienced applicants who are prepared to work hard in the conversion of enquiries into DIAMOND users.

The First Class package includes:- A high basic salary and commission, prestige car and expenses, 4 weeks' annual leave with pension and BUPA schemes — plus the opportunity of early promotion to Area Sales Manager with the support of an enthusiastic and professional organisation.

Should you wish to be considered for a position that could dramatically improve your career prospects and income, then forward your curriculum vitae to:-

Data Recall Ltd
Charles Boyle, Sales Director,
Data Recall Limited,
Sondes Place,
Surrey, RH4 3EF.

CLASSIFIED COPY

All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8016.

South East Thames Regional Health Authority

PROGRAMMERS
Distributed Processing Systems

Scale 2 £5,313 to £6,379 (under review)
Scale 4 £4,776 to £5,680 (under review)

Programmers are required to work on the development of Software and Production programs for Distributed Processing systems. Two Ruskin RH50 systems are installed in our Computer Centre at Lambeth and further system remote terminals and printers will be installed later this year. The systems will form part of a computer network including a 1900E 1904S running under George III and two ICL 2904s.

The posts require experience and knowledge of ICL 1900 software, including knowledge of George III. Training on RH50 systems will be provided

The Centre is situated in the grounds of Lambeth Hospital, close to the Elephant and Castle. It is accessible by public transport and free car parking facilities are available.

For further information and an application form (returnable within two weeks of this advertisement appearing) telephone or write to The Regional Computer Services Officer, South East Thames Regional Health Authority, Regional Computer Centre, Brook Drive, London SE11 4TH. Tel. 01-735 0071 Ext. 36.

SYSTEM 3 OPERATOR

Wine and spirit shippers situated in NW10 are seeking an experienced operator for their IBM System 3 Model 15 computer, which will shortly be upgraded to Model 15D.

The successful applicant will ideally have gained CCP experience controlling remote and local terminals and communicating IBM 3741 punches.

Single shift work 9.15 a.m. to 5.15 p.m. Mon./Fri.

The System Operator will possess initiative and be prepared to assist in the other functions of the D.P.D.

Holiday arrangements will be honoured.

Salary £5,00-£6,000.

Contact: Mr. Kardos 01-459 8011

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eMS

[illegible]

eMS

ANALYST/PROGRAMMER

The E M S Data Centre, concentrating on a large growing Turnkey Market, urgently needs experienced Analysts and Programmers to work on a wide variety of development projects. All development evolves around a swooping range of applications systems based on mini and micro computers, emulating the national progression the industry will have to follow into the 1980's. Client systems being developed at present include Manufacturers, Shareholders Printing and Newspaper Groups, Car Distributors and Hi-Tech Wholesalers. We offer a truly unique opportunity for all Birmingham based staff, or those wishing to work in the Midlands to join a company constantly reinvesting a high quantity of revenue to achieve dynamic growth. Career development opportunities are excellent with early promotion prospects assured for motivated staff eager to help our company progress towards a field-leading position during the next few years. Candidates will be accepted from all ranges of backgrounds. Any mixed forms will be considered. We will retrain where appropriate. But most important, we will give you job interest and a future. In addition, we will reward for effort and ability. EMS has the most impressive Data Centre in the country. Telephone us today for an early interview or even drop in and see our Personnel Unit. You will have no doubts of where to move next when you have seen our Unit. Relocation assistance will be given where appropriate.
Consultant Don Philip Telephone 021-454 7906

[illegible]

Our clients, a leading international software house, are seeking additional Project Leaders, Systems Analysts and Programmers to help meet the ever-increasing requirements of their clients.

They are particularly interested in programmers with 2 years' experience of IBM 370 COBOL, Assembler or RPG and programmers with ICL new range background. Systems Analysts with ICL programming background in COBOL are also urgently required. Preference will be given to Project Leaders with IBM or ICL background.

If you are interested in finding our more about these outstanding opportunities please ring DON PHILP on 021-454 7906

[illegible]

Our clients, a major banking organisation, currently require Systems Analysts and Programmers at all levels to work on the development of an integrated database oriented on-line real-time system based on a Univac 1100/82.

The development of this system reflects on client's intention to retain the lead on the provision of personal banking services.

In addition to guaranteed job satisfaction for the future and attractive salaries, our client offers extremely generous fringe benefits including flexitime, a House Purchase Scheme and contributory pension scheme.

If you are interested in one of these excellent opportunities, please telephone CAROL PROUDMAN on 0782 623665.

ANALYSTS/PROGRAMMERS

[illegible]

We urgently require a significant quantity of experienced analysts to work in a consulting team environment assigned to major client sites. Candidates should possess at least three years' practical systems experience, and be capable of working on systems design without supervision and communicating both with users and the client DP teams. Equally, the ability to fit into teams with client staff will be important as many projects incorporate the provision of extra resources to assist in meeting targets. A wide variety of interesting projects are available. Excellent salaries and fringe benefits are available for suitable candidates. All analysts seeking any positions in the North-West should contact us without delay. We have an unrivalled range of opportunities.

Consultant: Don Philp.
Telephone: 021-454 7906.

ANALYST/PROGRAMMER
KUWAIT

We need a constant range of experienced Analysts and Programmers to work for the leading Kuwaiti consultancy on a series of projects with a wide variety of clients.

Users include State Ministries, Oil Companies, Banks, Car Distributors, Trading Groups and Bureaux. Preference will be for candidates with some IBM experience, also COBOL programming background. Any specialised experience such as CICS, IMS or Mini Computers would be especially welcome. Due to accommodation costs, preference will be for single or married candidates with no children. The maximum number of children acceptable to the client will be two. Free furnished accommodation will be supplied in addition to attractive tax-free salaries, car allowances and five weeks' paid leave each year. Good opportunities exist to save money and enjoy a reasonable active social life.

Telephone today for an application form
John Wood, 0782 623665

[illegible]

[illegible] Computer [illegible]
[illegible] Computer [illegible]
[illegible] Computer [illegible]

ADVANCED COMPUTING AND APPLICATIONS PROJECTS

SCIENTIFIC CONSULTANCY

LONDON AND SCOTLAND

£5,000 - £9,000

You've got a good degree, a commitment to scientific computing and a desire to work at the forefront of technology.

You've got independence and initiative and you feel ready to enter consultancy and capitalise on your experience in any of the following fields.

NAVAL AND MILITARY APPLICATIONS, SONAR AND UNDERWATER COMMUNICATIONS, SIGNAL PROCESSING, OR, SIMULATION, NUMERICAL ANALYSIS, FIRE CONTROL SYSTEMS, COMMAND AND CONTROL

You will have some computer experience, typically in.—

REAL-TIME MINIS AND MICROS, CORAL, FORTRAN, ASSEMBLER, DATA ACQUISITION, DATABASE DESIGN, SCIENTIFIC COMPUTING

You'll join a new London based consultancy, part of an established group, set up specifically to provide expertise in these areas, and thus these are ground-floor opportunities enabling rapid career progression to team and project management positions. Apart from London based posts, projects in Scotland and elsewhere in the U.K. offer significant responsibility and attractive benefits.

Contact MARK IRENS for a confidential discussion on how your background matches the projects you are likely to work on, quoting reference CW/169/4.

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Real Time Programmers

A large multinational Company with offices in North & South London are currently developing a Micro based telecommunication system for which they require programmers to join their R & D departments.

You should have a minimum of 12 MONTHS experience on either Mainframes, Mini's or Micro's using a high level language, ideally assembler within a real-time environment.

To be involved in the development of a micro processor Real Time Operating System. All the compiling, linking, testing and simulation will be done on IBM hardware.

The company offer an excellent salary coupled with various benefits which include fixed working hours, subsidised restaurant, contributory pension scheme, social club, 23 days holiday and relocation expenses where necessary.

For further information please contact Harvey Kaye.

Datascene Recruitment Ltd
Sceptre House
169-173 Regent Street
London W1R 7FB

01-439 7871
24 hour answer phone

Checkout the new leaders—literally!

Tesco have one of the most up-to-date computer installations in the country: the IBM 3032, plus laser printers, plus Mass Storage System, plus a lot of other exciting peripherals.

What's more, we're using this hardware effectively, devising programmes that actually work in management terms and lead to greater efficiency, more rapid reaction to market and marketing factors and greater profitability all round. And this, after all, is what computers are all about.

We are now looking for two reasonably experienced people to overlook our systems, with varying degrees of responsibility:

As a **Systems Assurance Officer,** you would be directly involved in ensuring all programmes currently under development are secure and efficient, and be responsible to see that interface and recovery/restart procedures are adequate. To do this, you'll need solid experience in programming and program design, preferably including on-line and database facilities.

As a **Systems Audit Officer,** you'll be doing much the same job, but on an on-going basis, acting as advisor to Development Teams on Audit requirements at all stages of development. But you will also be responsible for seeing that management controls are regularly reviewed, and that the physical environment of the hardware itself is also adequately controlled. This obviously needs a wider experience, including systems analysis.

If you want to work for the new leaders in computer applications in either of these two positions, you'll need to be of graduate calibre. Convince us of that, convince us of the fact that you are seriously seeking more responsibility than your current position can offer and you're on the way to join the new leaders.

We, in our turn will offer realistic starting salaries and full fringe benefits, including re-location expenses to the beautiful Lea Valley area where necessary.

For more details and an application form, contact Fred Rayers, Tesco Stores Ltd., Tesco House, Delamare Road, Cheshunt, Herts. EN8 9SL. Tel: Waltham Cross 32222.

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PROGRAMMERS

MINIMUM 2 YEARS' EXPERIENCE
COBOL, BASIC or PL/1
WEST LONDON BASED
TOP MINI-COMPUTER MANUFACTURER
ALL DEVELOPMENT WORK
WIDE VARIETY OF APPLICATIONS

£5,000-£7,000 Per Annum
(Higher for Telecommunications experience)

A FIRST-CLASS OPPORTUNITY TO JOIN A BRAND NEW DIVISION OF A WORLD WIDE COMPUTER MANUFACTURER WITH EXCELLENT OPPORTUNITY FOR RAPID ADVANCEMENT.

To say this is the best opportunity for young programmers we have handled in recent months would be a gross understatement. Competitive initial salary, excellent opportunity for enhancement of experience and to learn new techniques and equally excellent promotion opportunities all add up to a truly worthwhile job. Our Clients offer all these things and more.

YOU OWE IT TO YOURSELF TO INVESTIGATE THIS FURTHER AND THIS IS SIMPLY DONE BY TELEPHONING ME, BOB BOWER, A.S.A.P, QUOTE REFERENCE CW/169/1.

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MAJOR MANUFACTURER
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£8K-£10K
(WHOLLY DEPENDENT ON EXPERIENCE)

This key position is immediately available and we feel it presently represents one of the best opportunities in its field.

Based in West London, the position is primarily responsible for Customer Training, Internal Induction Courses, Sales Training Courses, and running the Company's Users' Group. The present facility consists of approximately ten staff and a budget of over £250,000 with a planned growth to thirty staff and a £750,000 operating budget within 2½ years.

Clearly, since the position is part of the U.K. Management Team, we seek a high calibre individual to fill it. With direct responsibility in the areas of people, resources, administration and business and a reporting structure both locally and into Europe, the personal qualities and track record of the successful candidate will be outstanding. An excellence in communication, appearance, management, negotiations, judgement and principles is a prerequisite.

There is a detailed job specification available reflecting the importance our Clients attach to this position and interested candidates should telephone the Advising Director, BOB BOWER, as soon as possible to arrange for a mutual interchange of information. Since there is a fair degree of urgency candidates are requested to *telephone* in the first instance.

Reference CW/169/2

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With 2 years' experience

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- ★ 14 Subsidiary Companies to be Computerised (UK & EUROPE)
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- ★ Applications Order Entry, Inventory and Production Management
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Our Client, the European Headquarters for an American multi-National manufacturing corporation listed in Fortune's Top 500 with an annual turnover exceeding $750M and known for their high technology products in the hydraulics field, require Programmer/Analysts with at least one year's RPG II programming experience to join a small project team involved in the development, extension and modification of IBM's MAAPICS system to encompass the above listed applications at their Watford offices with subsequent commissioning of IBM System 34 computers at 14 of their subsidiary companies located throughout the UK and Europe.

Applicants with sound RPG II and perhaps knowledge and/or experience of IBM System 34 and MAAPICS must be able to organise user companies in the implementation of their computer facilities and systems. Your duties will include site preparation, files preparation, staff training, systems cut-over, and all liaison as necessary during the implementation period. Reporting to the European Data Processing Manager, you will have complete autonomy and must be able to cope with all aspects of establishing an IBM System 34 facility.

RPG II Programmer/Analysts wishing to further their career on IBM System 34 and possible System 38 in the future, and who are willing and capable of accepting responsibility at a senior level should contact Jim Fort immediately for complete details and a confidential interview with the client.

DON'T MISS THIS OUTSTANDING OPPORTUNITY – RING NOW QUOTING REF CW/169/3.

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GROUND-FLOOR OPPORTUNITY

for young, bright, energetic and ambitious

PROGRAMMER

for an expanding International Communication Company for its London Office.

The company is in the process of installing a sophisticated communication network between 3 continents based on IBM Series 1.

Suitable applicant should be prepared to train (outside the U.K.) by software house, implementing the programmes with the view of ultimately being able to maintain and change programmes independently.

Previous IBM Series 1 EDX experience is an asset but not a must.

Good salary, prospects of fast promotion, long-term potential to become head of department. Travel abroad and other fringe benefits offered to the right applicant.

SOUNDS GOOD?

Ring Miss Harris at (01) 937 6062
for appointment, or write to
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59/61 Kensington High Street
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Software Development Opportunities

Team Leader
Two Senior Programmers
Two Programmers

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As a member of one of our small expert teams you will be deeply involved in these important developments. A comprehensive training in modern Data Communications systems technology and protocol techniques, including X25, will be given to you. Contact with microprocessors is inevitable.

For your part you will be offering PDP Macro II experience and you will have used one or more high-level languages. Any systems programming will certainly count to your advantage.

These positions offer first-class opportunities for directly entering one of

the most interesting areas of the communications revolution and will command an attractive salary and benefits package.

Write, in full confidence, with brief details to:
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Our consultants are in regular contact with **all** of the recognised 'mini' companies — six are featured below — and applicants that we have introduced to them tell us we're right.

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(Start £6,000 + Overtime + 2 litre car)

Fabulous opportunity to join a leading manufacturer of a wide range of prestige mini computers and peripherals. Excellent prospects include above average growth (43% increase in turnover plus two new branch offices plus 21 new product launches, all in the last year). Helpful friendly young management.

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Ref. EK2014.

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THE TOP micro-maker offering exceptional benefits package for minicomputer experience.
Ref. EK2137.

SENIOR PROGRAMMER

£6,500 + bonus + choice of car

Our Client, a successful hardware and systems company with an impressive customer base enjoys a good reputation supported by a comprehensive product range. They offer a fabulous opportunity to an ambitious programmer (pref. Basic) to develop on-line applications. Based in Kingston or West London, you will have lots of variety and contact with people, only limited travel and plenty of scope for personal advancement. Nice people, generous (exceptionally low staff turnover), superb working conditions (sometimes work from home), you will attend training courses. £6,500 + car + profit share. Ring for further details now.
Ref. CC613.

SOFTWARE PROGRAMMER 6K+

Woking based company marketing minis to commercial users, offers great opportunity to self-starters with ASSEMBLER — working on File Management systems, communications, etc. Friendly young colleagues. Free car park, or station just up the road, if petrol runs short!
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£17,000 + Car

Our client, one of the New Leaders in the Mini-Computer field, who during 1978:
Broke the $100M barrier.
Doubled their Turnover.
Doubled their Customer Base.
Built 2 Major Facilities.
are offering exciting opportunities in the South to ambitious Sales Executives. If you need:
Basic Salary c. £7,000
Earnings Guarantee
Realistic Quotas
Generous Commission (on quota £17,000)
2 litre car
Comprehensive Training
Unrivalled management opportunities
Then call today.

Ref. CS1146.

CONSULTANTS

£8K-10K

Our clients — a world-wide minicomputer company — are building up a newly formed team to handle one-off user requirements. You will be meeting people in a variety of different industries, you will have opportunities to travel if you wish. This is a superb chance to apply your commercial systems background in a multi-discipline role — pre and post sales support, analysis and design proposals, project-management, etc. Your S&P background will determine the salary level.

The Company is based in the Maidenhead-Reading area with good travel to London and the West Coast.

Promotion will come easily for an achiever — if you are ready now, see below . . .

STOP PRESS, URGENT

EUROPEAN M.I.S. MANAGER

c.£10K + benefits
Maidenhead / Reading area.

Ref. CA766.

ab executive (kingston) ltd 01-549 1441

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In order to assist you in finding a suitable position from one of the hundreds of LOCAL VACANCIES throughout Yorkshire and Humberside which are currently registered with us we have arranged the following informal evening interviews next week:

Monday 11th June	BRADFORD Norfolk Gardens Hotel, Norfolk Gardens.
Tuesday 12th June	SHEFFIELD Grosvenor House Hotel, Charter Square.
Wednesday 13th June	HULL Centre Hotel, Paragon Street.
Thursday 14th June	LEEDS Dragonara Hotel, Neville Street.

If you are an ANALYST/PROGRAMMER, PROGRAMMER, SALES PERSON, FIELD SERVICE ENGINEER, CONTRACT PROGRAMMER or O & M ANALYST then come and talk with us any day between 4.30 p.m. and 9.00 p.m. We can help most of the people who contact us (with at least 6 months real experience) to find a more rewarding and higher paid career. Come along and let us help you — we're looking forward to meeting you.

LORIEN COMPUTER SERVICES
OCS House,
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Telephone 0532 444185
Recruitment Consultants (24 hour Ansaphone service)

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ROSSENDALE c £6000 + Benefits
SENIOR PROGRAMMER
Go-ahead commercial organisation is seeking a COBOL Programmer with 3 to 4 years experience to lead small team. Variety of absorbing systems and user contact.

CHESTER £5500
COBOL PROGRAMMERS
Experienced COBOL programmers with some ASSEMBLER, are required to write application software and packages for minis. With Software House offering excellent prospects.

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Well established organisation needs programmers with a variety of experience to meet expansion. An opportunity to work on large TP systems with the latest Data-base techniques. ICL 1900, 2900 or System 4 background preferred.

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Manchester based organisation is seeking a good IBM applications programmer to work on latest developments in a 370 CICS/VS environment.

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Highly successful Company offering services to commerce and industry is seeking mature staff with good RPG II experience to cater for business expansion.

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Young COBOL programmers are being sought by one of the leading UK organisations. Excellent working conditions, large systems and hardware.

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Our client, a multi-site user committed to long term development, require a Senior Programmer with in-depth COBOL experience.

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The company, solidly based in the insurance industry, are already experienced computer users, but the recent rapid growth and development of the data processing function, creates the need to appoint two senior people in the systems area.

SYSTEMS MANAGER — c.£10,000 + Car

The successful applicant will be personable and mature, aged 35-45, with a good knowledge of general insurance, preferably from the broking aspect.

There must be evidence of a proven track record in the systems area, management experience and an ability to achieve results. An appreciation of current IBM hardware and software facilities is necessary to ensure a close relationship with the technical section.

Systems are specifically user driven, both in respect of improving management productivity and in the automation of clerical functions, therefore, a sound business awareness is extremely important in the daily control and direction of the systems department.

PROJECT LEADER — £8-9,000

He/She will have many of the attributes required of the Systems Manager, ideally with a similar background of general insurance related systems, and again preferably from the broking side.

The position requires a deeper understanding of systems technicalities, but business skills and user empathy are equally important, coupled with enthusiasm and a sense of urgency to complete projects. Previous experience of project leading at analyst level will be expected, particularly in an installation based on IBM hardware.

Our client is intent on expansion and efficiency throughout the group. The commitment to lead their field, will mean a high level of challenge and job interest for many years.

We would stress again, that candidates for both positions must relate closely to the user departments in developing and implementing the new technology.

Written details must provide sufficient information for interview assessment to be made.

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OPERATIONS MANAGER — **Salary c. £6,500**

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Mrs. C. Ewing,
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Director: Professor Gordon Black

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UMRCC is a national centre providing a general service to over thirty universities in the United Kingdom. This is currently based on two Control Data 7600 computers each front-ended by an ICL 1900. A CDC CYBER 72 provides an *interactive service to Manchester users*, accessed by over a hundred terminals.

SYSTEMS GROUP

OPERATING SYSTEMS

Lead a team responsible for the development and support of the GEORGE 3 operating system on the ICL 1906A and 1904S computers. For this senior appointment you should have in-depth knowledge of GEORGE 3 and preferably experience in leading a team of programmers. If you have less experience you could be a member of the team. Current projects include the implementation of the North West Universities Network System (CANNET), the investigation of filestore subsystems, and replacement processors. Ref. 124/79/CW.

The salary will be on the scale £4,232-£7,145 p.a. or £5,689-£8,452 p.a. depending on experience. The scales will increase to £4,333-£7,521 p.a. and £7,227-£8,992 p.a. in October, 1979.

COMPILERS

Help to provide, maintain, and support a wide range of compilers. You should have experience of compilers and systems programming, together with a knowledge of FORTRAN and one other high level language. A knowledge of CDC and/or ICL 1900 systems would be an advantage. Ref. 125/78/CW.

The salary will be on the scale £5,689-£6,106 p.a. which will increase to £3,775-£8,355 p.a. in October, 1979.

RESOURCE CONTROL SYSTEMS

Assist in the provision of resource control software. The successful candidate will be working with a team responsible for the development and support of software to monitor and control computer resources allocated to users. You should have experience of program development from design to implementation. Ref. 126/78/CW.

The salary will be on the scale £3,689-£6,108 p.a. or £4,233-£7,145 p.a. depending on experience. These scales will increase to £3,775-£8,355 p.a. and £4,333-£7,521 p.a. in October, 1979.

INTERACTIVE SYSTEMS GROUP

COMMUNICATIONS SOFTWARE

Develop software for packet switching to link the ICL 1900 computers to the Post Office PSS via a GE 4070 processor. You should have a successful record of implementing software systems and the ability to lead technical development is essential. Experience of real-time systems or computer networks would be an advantage. If you have less experience you could join the team at a lower grade. Ref. 127/78/CW.

The salary for the senior programmer will be on the scale £5,689-£8,452 p.a. which will increase to £7,227-£8,992 p.a. in October, 1978. The salary for the programmer will be on the scale £3,689-£6,108 p.a. or £4,232-£7,145 p.a. depending on experience; these scales will increase to £3,775-£8,355 p.a. and £4,333-£7,521 p.a. in October, 1978.

INTERACTIVE SYSTEMS

Join a new interactive systems group. Two programmers will be appointed to work with a team responsible for the development and support of the service based on the CYBER 72 running under the NOS operating system. Current project areas include system performance monitoring and analysis, filestore management, and planning future enhancements. You should have some experience of systems programming, preferably on Control Data computers. Ref 128/79/CW.

The salary for both posts will be on the scale £3,689-£6,108 p.a. or £4,232-£7,145 p.a. depending on experience. These scales will increase to £3,775-£8,355 p.a. and £4,333-£7,521 p.a. in October, 1979.

USER SERVICES GROUP

APPLICATIONS SOFTWARE

Help to support and maintain a wide range of applications software. The principal activities of the successful candidate will be concerned with software provided to users at Manchester who have access to the local interactive service, currently based on the CYBER 72. You should have a sound knowledge of FORTRAN, and expertise with graphics, statistical or engineering packages would be an advantage. Ref. 129/79/CW.

The salary will be on the scale £4,232-£7,145 p.a. which will increase to £4,333-£7,521 p.a. in October, 1979.

INFORMATION AND DOCUMENTATION

Work with a section which produces manuals describing the computer services offered to our 10,000 users. Particular emphasis will be placed on documenting facilities available on the local CYBER 72 interactive computer. The appointee will also be expected to take part in the advisory service provided to these users from the University of Manchester. Ref. 130/79/CW.

The salary will be on the scale £3,689-£6,108 p.a. which will increase to £3,775-£8,355 p.a. in October, 1979.

LIAISON AND TRAINING

Join a team which maintains contact with representatives of the fifty user sites and departments that receive computing services from UMRCC. The person appointed will be advising and helping users with a wide range of backgrounds and expertise. You should be interested in dealing with people and have a knowledge of one or more high level programming languages. Ref. 131/79/CW.

The salary will be on the scale £3,689-£6,108 p.a. which will increase to £3,775-£8,355 p.a. in October, 1979.

OPERATIONS GROUP

COMPUTER MANAGER

Supervise the day-to-day running of the large batch systems. The person appointed will be responsible for the standards of operation, the production records of equipment performance, and for stock control of consumable materials. An essential part of the job will be liaison with systems programmers and engineering maintenance staff, and supervision of operations staff through intermediate supervisors. Previous management experience at a large ICL or CDC installation would be an advantage. Ref 132/79/CW.

TECHNICAL SERVICES MANAGER

Be responsible for the supervision of the CYBER 72 interactive system and the off-line facilities. The successful candidate will be expected to play a leading role in the installation and introduction of a new interactive service. In addition, a large magnetic tape library and other off-line facilities will be under the control of the appointee. Previous management experience in these areas or technical qualifications and experience at a high level would be an advantage. Ref 133/79/CW.

The salary for both management posts will be on the scale £5,906-£8,452 p.a. which will increase to £7,227-£8,992 p.a. in October, 1979.

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All systems will use the latest developments in on-line data base techniques using Cobol as the application language. Suitable experience in all these areas will naturally be an advantage.

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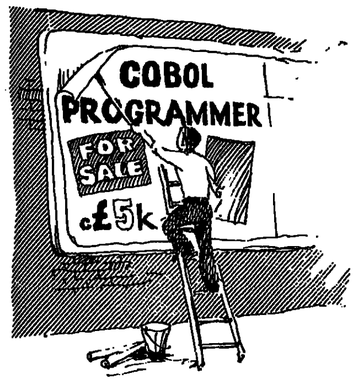

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SYSTEMS AND PROGRAMMING SECTION

SYSTEMS ANALYST

Salary grade: A.P. V £5568/£6066 (including supplement)

Due to internal promotion a vacancy exists for a systems analyst to join one of our Project Teams.

Applicants should have at least 2 years' programming experience and systems design experience. They should be able to demonstrate an ability to work in a team environment. A professional qualification would be of advantage

ANALYST/ PROGRAMMERS

Salary grade: A.P. £4820/£5403 (including supplements)

An opportunity presently exists for two Analyst/Programmers to join the Systems and Programming Project Teams

Applicants should have at least three years' experience of programming in COBOL and be able to demonstrate an ability to carry out systems analysis in a team environment. A professional qualification would be of advantage

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We are expanding our Microprocessor Application Section and have development plans that will project us well into the 1980's and further. It's going to be an exciting time with lots of opportunities.

If you are aged between 20 and 30, have a Degree in Electronics, Computer Science or Mathematics you could be one of the people we are looking for. You need not necessarily have direct experience in microprocessor technology but, it would be an advantage.

What are the jobs? Our Microprocessor Application Section is involved in applying microprocessors to products and industrial control, using board and chip level microcomputers. Our expansion plans incorporate the need for people in two interelated areas:

1. Software

You will be primarily involved in program development in assembler and high level language. You will be expected to work with minimum supervision to produce the complete software package - identifying requirements through to implementing systems. This will mean co-operating with hardware engineers and liaising with customers.

2. Hardware

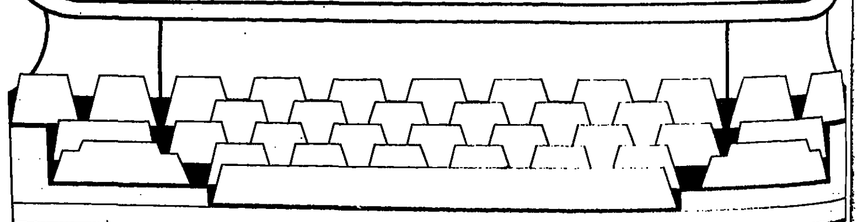
You will be primarily concerned with component and system specification, with direct involvement in circuit design and printed circuit layout and analogue and digital interfacing.

For the successful men and women there are attractive salaries plus all the additional benefits you would expect from working for Britain's largest international engineering group.

Write today, enclosing a full curriculum vitae, and see if GKN can add a little planned excitement to 1979.

Write to:
Personnel Executive, GKN Group Technological Centre,
Birmingham New Road, Lanesfield, Wolverhampton, WV4 6BW.

GKN - Britain's largest international engineering group



PROGRAMMER

c. £5,500

A vacancy for a Programmer has arisen with E. Gomme Ltd. who design and manufacture G-Plan furniture.

The position involves membership of a small team writing application programmes in PL/1 for both batch and T.P. (SHADOW II) systems. Program development is done on-line using SHADOW/GUO1A. The successful applicant will be encouraged to develop system programming expertise.

The installation is A256K IBM 370/125 with 3330 disks, tape and VDUs, and further expansion is planned.

Applicants should preferably have at least two years' experience in PL/1, RPGII, SHADOW II or System programming experience would be an advantage.

The Company is a first-class employer and will, where appropriate, assist with removal expenses.

Write to:

Company Personnel Manager
E. GOMME LIMITED
Spring Gardens, High Wycombe, Bucks.

Real-Time Coverage Programmers

Further expansion of BABS already one of Europe's largest real-time computer systems offers an opportunity for men and women to gain valuable experience in large real-time systems control, database management and operations. Salaries will reflect qualifications and experience and starting pay will be up to £5500, with excellent opportunities for progression to more senior positions with salaries of up to £8000 and beyond.

British Airways' real-time computer systems provides world-wide, round-the-clock Passenger Service System handling approximately 2 million enquiries a day from over 3000 on-line terminals. The system is currently based on Amdahl 470/V7 CPU's under the Airline Control Program (ACP) operating system.

Coverage programmers work closely with all programming groups, operations and engineering staff to control the system involving performance monitoring, system, testing, establishment of cutover procedures, and producing utility programs which contribute to the overall security of the system.

Candidates should ideally have a minimum of 2 years commercial programming experience, preferably using Assembler language. Additionally, experience in systems programming, or systems initialisation, and control would be an advantage.

As one of the world's leading international airlines, British Airways offers excellent conditions of employment which includes a holiday pay supplement, inflation-proof pension scheme, subsidised cafeteria, sports and social facilities and favourable holiday air travel opportunities.

If you like the idea, and you'd like to find out more, you can arrange an early interview by 'phoning BABS Systems Control on 01-759 5511 Ext. 5156/3232/3697 on Tuesday 19th or Wednesday 20th June between 6 pm and 8 pm or any day during normal office hours.

Alternatively, write to:
Recruitment & Selection, British Airways, P.O. Box 10, Heathrow Airport-London, Hounslow, Middlesex. TW6 2JA.

British Airways welcomes applications from suitably qualified Registered Disabled Persons.

British airways

Contract Spot

SYSTEMS ANALYSTS PREF. REAL-TIME EXP.

SCIENTIFIC ANALYST/PROGS.

IBM 360/370 COBOL

LONDON BETTER RATES PROMPT PAYMENT

Phone Paula on 01-946 4424
Meteor Computer Consultants Ltd.

FREELANCE PROGRAMMERS
£280 to £400 p.w.
5 yrs. + exp. All Computers UK & OVERSEAS
Eng. Apts.

PROGRAMMERS

Henley-on-Thames c. £5,000

Spring Grove Services, a leading company in the garment rental business, requires Programmers to work on new developments in the company's operations.

Our present system run under GEORGE 2 on an ICL 1903T, with a subsidiary company in Holland using an IBM System 32. The market is changing rapidly and our systems must change to remain competitive. To this end we are investigating the use of mini-computers and micro-electronics and the techniques of distributed processing.

We need Programmers who can come up with good ideas as well as good software. Two years' COBOL experience is essential and a knowledge of RPG-II, ICL-1900 or IBM System 32 machines would be an advantage. The successful applicants will join one of our highly skilled teams based in Henley. There will be opportunities to travel to our processing centres throughout the U.K. There are, attractive conditions, benefits including free insurance, and a non-contributory pension scheme.

For further details and application form contact:

Wendy Hewlett
Spring Grove Services Ltd.
Reading Road
Henley-on-Thames
Oxon RG9 1AY
Tel. Henley 5071

Spring Grove

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611
9 a.m.-9 p.m. FRI.-WEDS.
(June 8, 11, 12, 13)

Come and work with ICL in Central London

WE ARE a large Commercial Organisation based in London

OUR SYSTEMS ICL 1900s upgrading to 2903 and 2960 plus PDP 11

WE REQUIRE

Programmers	ICL 1900/2900 experience preferred
Junior Analysts	ICL experience preferred

Teleprocessing experience would be helpful but we will provide training as necessary

WE OFFER
Excellent salaries
First-class training facilities
Usual large company benefits

SALARY £5½-7½K

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Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

MYRIAD

ICL OPERATIONS SUPPORT

S.W. LONDON **NO SHIFTS** **£5000-£6500**

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The role of the operations support team is to write SCL then implement and support production systems and provide a comprehensive consultancy service to the operations and production control departments. The company is now extending this team and is able to offer a number of outstanding opportunities to ICL operations staff at two levels of experience.

★ 1900 GEORGE II/II + Operations Personnel — If you can offer a sound background incorporating experience of JCL, utilities, program libraries and macro's then the company will provide extensive training in VME/B SCL, and all aspects of 2960.

★ 2900 VME/B Support Personnel — If you have experience of operations support and writing SCL in a System B environment this is an ideal opportunity to develop and enhance your expertise as a senior member of an expanding team.

The commencing salaries are in a range according to experience and the positions offer a highly rewarding future with excellent opportunities for career progression within a sophisticated installation.

Ref. SW1/0708

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consultants
Telephone or write to:- 30 Fleet Street London EC4Y 1AA 01-353 0981 (24 hrs)

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HENLEY-ON-THAMES

Assembler Programmers

Videcom Ltd. are manufacturers of the world's first multi-host computer terminal facility with an impressive installed base worldwide including numerous international airlines and major corporations utilising its products in sophisticated communications networks. Due to continued rapid expansion Videcom urgently require experienced Assembler Programmers. If you are self-motivated and have 1—4 years Assembler experience this is a superb opportunity to join an expanding organisation.

If the prospect of working with a small team on exciting state-of-the-art communications projects in the pleasant surroundings of Henley-on-Thames is appealing, then come and talk to us.

Salary will be competitive and will appeal to those already earning in excess of £5,000 per annum.

Phone Logistix on 01-491 4636 who are retained as selection consultants or write direct to Mrs. M. Barker at Videcom Ltd.Newtown Estate, Reading Road, Henley-on-Thames, Oxon RG9 1HG.

LOGISTIX
360 Oxford Street,
London. W1N 9HA.
Tel:01-491 4636

YES

Urgently required for
Holland
Enthusiastic Systems 34 Programmers who would like to earn in excess of
£11,000pa
Phone or write to Norma Baxter at 01-953 4066
Advance-and be recognised
Howard Organisation International Ltd.,
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OPPORTUNITY
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COMPUTER STATIONERY REPRESENTATIVE

with a leading Croydon based company.

You must have enthusiasm for computers and experience in selling to middle management.

Your area will be Norfolk, Suffolk, Cambridge and Bedford

In return you will receive a good salary, commission and bonuses, a company car and four weeks' holiday. Plus the benefits of a non-contributory pension scheme and two bedroom company flat with service agreement within your territory.

Apply in writing to

Mr. M. J. Soper
Managing Director
SCS BUSINESS SYSTEMS LTD.
SCS House, 77 Milton Road
Croydon, Surrey

Are you as good with people as you are with computers?

Data training - in the past 8 years has become one of the largest and most successful computer training companies in the UK. The high standard of our courses has attracted companies in all spheres - corporations, government departments, local authorities and computer bureaux.

The number of students attending computer courses is continually increasing, which is why we need Programmers to join our Lecturing Staff now.

In addition to looking for experienced programmers we also seek a programmer with specific ICL 2900 experience who wants to use his skills to get involved in a rapidly developing course of computers.

You should be mature with the ability to talk to people, communicate your skills and experience effectively and successfully.

After an initial training period your work will be split between delivering courses, compiling reports, creating student installations and ensuring the training courses are developed, comprehensive and practical as possible.

You'll enjoy an excellent salary, between £5,500 to £8,000 with an annual bonus and monthly commission based on profit. Also you'll get will enjoy the challenge and reward which is part of an instructor life and the satisfaction which can be derived from a successful class of students.

If you think you are good with people as you are with computers, we'd like to hear from you.

Ring up to 7.00 p.m. for an appointment for interview, or find out more about our informal discussions which are held on Saturday mornings.

MANCHESTER:
Vic Dalton, Arndale Centre,
Chester Road, Stretford,
Manchester 061 865 7911.

LONDON:
Gill Stannard, Anson House,
17 Elvaston Street, London S.W.1.
01-828 2282.

Data Training Ltd

Senior Computer Operator
Redhill

Philips Research Laboratories require an experienced operator to join a small team in the Computer Department.

The Department runs a computing service for scientists and engineers involved in many varied areas of research. It is based on two ICL 1904S processors, using a special version of George 3 which allows both to access the same file store. A Digico 1603 front end connects 38 terminals. In June an SEL 32 computer system will be installed to do CAD of integrated circuits.

The person chosen will be involved in all usual aspects of operating, and will also be required to assist and deputise for the Chief Computer Operator in organisational and technical matters. Consequently, several years of 1900 and George 3 experience are essential, together with a technical knowledge of communications equipment. The ability and flexibility to learn about new systems is also needed.

A five-day week is worked, normally 8.30 a.m. to 4.30 p.m. with shift hours (five times in two weeks) from 2 p.m. to 10 p.m.

Please apply to Mr. M. L. Malpass, Philips Research Laboratories, Cross Oak Lane, Salfords, Redhill, Surrey, quoting reference No. 133.

Philips Research Laboratories

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Ref: TMHM for further details

YEOVIL DISTRICT COUNCIL

TREASURER'S DEPARTMENT

COMPUTER PROGRAMMER

Salary up to £4146 inclusive (pay award due 1st July 1979)

The Council's computer is an ICL 2903 with EDS'80's and on-line enquiry facilities. The post offers a wide variety of work mainly in the area of programming, operating system maintenance and software up-dates.

Programming languages are RPG II and FIND-2 and previous experience is desirable but not essential as conversion training courses will be provided.

The area is an attractive mixture of rural and urban developments. The district is pleasantly situated and its boundaries extend to the foot of the Poldon Hills in the south and east and the boundaries of Devon and Dorset in the south and east and the Blackdown Hills in the west.

Financial assistance towards relocation expenses up to £600 and housing accommodation will be available in appropriate cases.

Application form and job description available from Personnel Officer, 81 Preston Road, Yeovil, Somerset BA20 2DP or telephone Yeovil 5472 extension 43.

Closing Date: 20th June 1979.

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611
9 a.m.-9 p.m. FRI-.WEDS.
(June 8, 11, 12, 13)

COMPUTER ENGINEERS

Join the largest independent computer maintenance organisation in Britain and improve both your prospects and your technical environment

This well-established company is still growing and can offer EXPERIENCED AND TRAINEE COMPUTER ENGINEERS a good variety of systems to work with — IBM/DEC/DG/CA etc.

Right now they need good people in all of the following areas:

BIRMINGHAM BRISTOL	Field Engineer (ideally PDP 11 trained) Senior Specialist (IBM 370) Site Engineers (ideally PDP 11 trained) Trainee Engineers (ONC/Electronics exp.)
CAMBRIDGE HITCHIN	Field Engineer (mini computer experience) Technical Specialist (Support and manufacturing liaison experience)
LONDON	Field Engineers (PDP 11 or other mini computer experience) Trainee Engineers (ONC/Electronics experience)
STOKE-ON-TRENT	Workshop Engineers (component level repair experience)
TEDDINGTON (Middx)	Electronic Engineer (to work on Data Comms Network)

Competitive Remuneration Package

★ Attractive basic salary
★ Profit related bonus
★ Company car or generous car allowance
★ Non-contributory pension scheme
★ Air travel/holiday concessions

This is your chance to broaden your experience and develop your career with a company *specialising* in service to the computer industry, so don't miss it — contact Peter Gorton or Alan Slater, now!

Change your tube

EUROPEAN MEDICAL SUBSIDIARY
INTERNATIONAL INDUSTRIAL COMPANY
RURAL ESSEX/SUFFOLK BORDERS
01-637 9611

TEST CARS	YES	NO
Analyst/Programmer		
RPG II		
COBOL		
System 3 experience		
ICL 2900 experience		
Min. 18m. D.P. experience		

You passed the test?

Good!

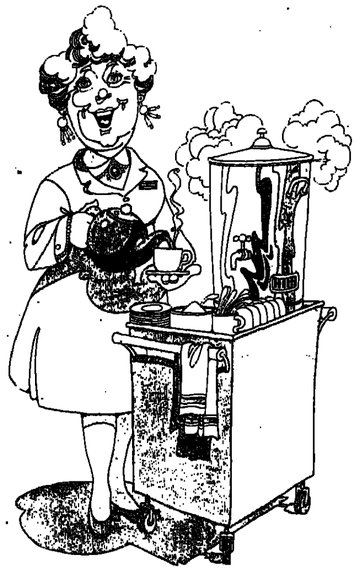
Join our small development teams using a Systems 3/15D both stand-alone, and on-line to a 370/158 at our U.K. Data Centre.

BENEFITS?
GOOD NEGOTIABLE SALARY, excellent perks, and RELOCATION help where necessary.

So for your move to the country contact Val Bowen 9 a.m.-9 p.m.

Suite 201/6, Albany House, 324 Regent Street, London W1R 5AA 01-637 9611 MANAGEMENT & EXECUTIVE SELECTION

Is this the high point in your programming day?



Ever get the feeling you're using your 10MB brain to handle a programming job that only needs a few kB of intelligence and initiative?

Don't worry — you're not alone.

Plenty of good programmers are in jobs that have about as much real challenge and interest as a junior crossword puzzle.

Only you're luckier than they are. You're about to discover a way out.

If you're anything more than just another commercial programmer, and particularly if you're interested in things mechanical, we could take you out of the humdrum world of programming, and start you in a career in software engineering.

You'd develop real-time software that forms the heart of some of the world's most advanced electronic systems, like airborne radar, surveillance networks and sonar. You wouldn't just work closely with systems users, you'd be part of the team developing a whole system from scratch. You'd work in CORAL (don't worry if it's a foreign language to you at the moment) and you'd work to the highest levels of integrity.

Frankly, if you don't find our kind of work exciting and rewarding, there's very little we can suggest.

Except perhaps hang gliding blindfold over a swamp full of alligators.

To find out more about the excitement of software engineering with Marconi Avionics at Borehamwood, telephone or write to Chris Hill, Marconi Avionics Limited, FREEPOST, Elstree Way, Borehamwood, Herts WD6 1BR. Telephone 01-953 2030 ext. 3449.

Please quote reference MA 79080.

MARCONI AVIONICS

A GEC-Marconi Electronics Company

1900 COBOL CIRCA £230 p.w. 01-262 2251

LOUGHBOROUGH UNIVERSITY OF TECHNOLOGY

PROGRAMMER/ ANALYST

An [illegible] are invited for the post of PROGRAMMER/ANALYST in the Data Processing Unit of the Library Administration, based on mainly IBM/S and Prime 2 x 400 machines. applications mainly in finance or personnel records. A degree or equivalent would be preferred and some knowledge of financial computing. COBOL is required and FILETAB would be an advantage.

Salary within scale £3609 to £6081 is hoped to appoint within the lower half of the scale. Further information or application form from Paul Mann, Establishment Officer, tel. 75043

Loughborough Leicestershire

2903 EXEC 1 COBOL £225 p.w. 01-262 2251

What have you got Toulouse...?

One of the most advanced computer units in the world.

Not surprising really, considering it belongs to one of the world's leading semiconductor manufacturers, Motorola. To ensure that this fast-developing and broad-based organisation continues to operate with maximum efficiency it's essential that information is centralised and dealt with in the most effective way. That's why our Computer people are so important! Expansion has now created great opportunities at our French centre for the following people:

Analyst/Programmers

Ideally you should have 2-5 years' relevant experience, particularly of COBOL, MARK IV, and IMS. Those with previous supervisory experience or with proven ability in Project Management will find this a definite advantage. A knowledge of French is obviously an asset.

East Kilbride

And for those who would rather work closer to home there are vacancies in the highly advanced EDP unit at our East Kilbride plant for Analyst/Programmers.

Here we're about to install an IBM 8100 decentralised computer. This involves a new IBM/MB package and you'll be playing a key role introducing complicated time sharing programmes. You'll also be required to travel to various Motorola centres on the Continent.

The experience requirements are the same as above but consideration will also be given to candidates who possess a minimum of 3 years' experience in programming and systems analysis and who have a good knowledge of COBOL.

Since you have nothing to lose—and a bright new future to gain—contact Alan Smith, Personnel Officer now at Motorola Limited, Colvilles Road, East Kilbride, Scotland. Or telephone East Kilbride 38101.

MOTOROLA

An exceptional opportunity in computer systems training

Data Logic's Terminal Systems Division is one of Europe's leading suppliers of intelligent terminals and distributed processing systems. Our users come from government, industry and commerce. We are engaged in an ambitious expansion programme aimed at more than doubling turnover in the next five years. This will create extremely attractive prospects for career progression.

We require a **Training Officer** to take responsibility for both customer and internal staff training. He or she will plan and prepare courses on the Division's hardware and software products. The courses will be given in-house and at customer sites throughout the country. The Training Officer will also control demonstration areas and systems at our new headquarters in Central London, now being equipped to the very highest standards.

Candidates should have an aptitude for computing as well as a recognised teaching qualification or relevant training experience. They are likely to be engaged currently in a teaching position in higher education or in a training role with a mainframe or minicomputer manufacturer.

This is a new position and the opportunities will be considerable for an imaginative candidate to influence the Division's future ... and hence his or her own career.

Data Logic

A Raytheon Company

Write or call quoting reference TS/04:
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29 Marylebone Road
London NW1
01-486 7288

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We are currently seeking engineers at all levels of experience, trainee to senior, to service our customer base both in the field and at central office.

Salary will be commensurate with experience and some positions carry a company car. All engineers wishing to advance their careers into computer communications with a market leader should contact by letter or telephone:

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to be responsible direct to Managing Director in a growing engineering company. Cobol experience in interactive operation required. Some [illegible] necessary. Machine configuration NCR [illegible] knowledge inventory and production control [illegible] Supervising staff of 3.

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MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611
9 a.m.-9 p.m. FRI.-WEDS.
(June 8, 11, 12, 13)

What's in a £9k name

DPM ?
Consultant ?
Project leader ?

Titles don't make the man in this industry — it's you that really counts — especially if you work for this small dynamic systems group specialising in on-line real time systems for the Travel Industry.

What we require are two CONSULTANTS to effectively act as DPM to several consulting clients — not only recognising their problems, but knowing the solution or designing it from scratch, and then controlling it through to implementation and operation.

YOU will be based in WEST LONDON and can expect an attractive and flexible salary package of circa £9K.

We are also keen to recruit a SYSTEMS ANALYST with the potential to become a Consultant; to help with our expanding workload. For this position, we are offering c. £7K.

Contact Terry Bate between 9 a.m.-9 p.m.

LARGE SYSTEMS
PLUG COMPATIBLE PERIPHERALS
MANCHESTER
LEICESTER
LONDON

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The UK division of a major multi-national computer manufacturer is seeking experienced engineers to expand its existing team of hardware professionals.

Large Computer Systems
earnings to £8K

Computer service personnel are required for the site maintenance of installations in MANCHESTER, LEICESTER and CENTRAL LONDON.

Plug Compatible Peripheral Sub Systems
earnings to £10K + car

Field service personnel are required for maintenance of distributed installations in the CENTRAL LONDON and GREATER LONDON areas.

With this organisation career progression, training and income are regularly reviewed, ensuring that effort and talents are realistically rewarded.

Don't miss this chance to join this successful and progressive team - contact Peter Gorton now!

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

2960 SHIFT MANAGER

£5000-£6000
+ Shift Allowance

Due to a recent promotion, we have an opening for an Operations professional to join the Bureau which is at an early and interesting stage of development. The person appointed will enjoy wide responsibilities and also have excellent visibility within the Group for future career advancement.

Our main requirements are:—

★ **2900 practical experience using VME/B.**

★ **Operations staff supervisory experience.**

★ **A mature, responsible outlook with a strong desire to meet targets.**

In addition to a salary within the above range the usual terms and benefits of a large Company will apply. Please write in the first instance giving details of age, qualifications, and experience to:

SAFE COMPUTING LIMITED

J. A. Thomas, Computer Operations Manager
Safe Computing Limited, Intersection House
110-112 Birmingham Road, West Bromwich, West Midlands B70 6RX

A member of the Chubb Group.

Our computer installation — an ICL 1902T 80K operating under George II is an efficient, busy environment, with many new developments taking place.

It is at this interesting moment that we need a senior operator to fill a vacancy resulting from internal promotions.

As we will select someone who is obviously committed to the computing world, who aims to go further, and fast, we'll give every practical encouragement to the successful applicant including professional training by courses and on-the-job tuition. There may also be opportunities for promotion either within the operations and programming sections and on to systems analyst if the ability is there.

Starting salary up to £6,000 for an experienced computer operator, including allowances for the 2 shift structure. Benefits include car purchase scheme, 4 weeks holiday and company pension scheme.

Please apply to:
Maureen Cross, Toyota (GB) Limited, 320 Purley Way, Croydon, Surrey CR9 4HB Telephone: 01-681 1921
Interviews will be held at our Crawley office.

Senior Computer Operator

Who wants to get on-quickly

Up to £5,000
(Crawley, Sussex)

TOYOTA
Everything keeps going right

SOUTHERN CLIMBS!

Bognor Regis	Systems Designer (Micro/Mini)	£7,500
Guildford	Senior Programmer (Bureau)	c £7,500
Farnborough	Systems Programmer (Basic)	£7,000+
Leatherhead	Senior Operator (IBM)	£5,000
Farnborough	Consultat (System House)	c £9,000
Basingstoke	Trainee Programmer (ICL New Range)	c £3,500
Worthing	Project Leader (Bureau)	£6,500

These are but a few of the 100+ vacancies we are currently seeking to fill.
BOB WILLIAMS KNOWS THE SOUTHERN MARKET and can be relied upon to arrange interesting and relevant interviews.
Telephone Today! for an early interview.

Management Personnel
2 Tunsgate Guildford Surrey
GUILDFORD (0483) 66666

CAPITAL APPTS.
FORTRAN
Programmers urgently required for Industrial and Scientific Developments.
£3,000-£8,000
ALL AREAS
Phone for free list of vacancies
637 5551 day, 636 9659 eve.
23 Wilmslow St. London W.1.

CAPITAL APPTS.
GRADUATES
Urgently required to Trainee positions. Industrial, scientific and Commercial situations.
SALARIES c. £3,000
ALL AREAS
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23 Wilmslow St. London W.1.

Recruitment **LOGISTIX** in Informatics

Fortran Programmers West Germany

Salary: £16K

The leading Scandinavian Systems and Turnkey Supplier with offices in Scandinavia, Netherlands and U.S. requires **Fortran Programmers** for its expanding West German operations. There is a distinct possibility that the successful candidates will be able to relocate to the Company's Head office. Whilst the applications under development are sophisticated Real-Time Projects previous experience of Real-Time is not absolutely essential but in-depth Fortran and Assembler programming expertise is a pre-requisite. Preference wil be given to those candidates who have very recent or current experience on UNIVAC 490/4 or UNIVAC 1100 series. Of course, willingness to relocate to a most attractive part of Rhineland, Germany is absolutely essential. To assist in your removal our client will meet all relocation expenses in addition to providing initial paid accommodation. A Senior Manager from our client's Head Office will conduct interviews in late June. Ref: L/7/05/A

Mini Cobol Programmers Netherlands

Salary: £12K + Car

A small but expanding Systems House Supplier basing its product line on both Zilog Z80 and Intel 8085 microprocessors is shortly to release new hardware and software on to the Dutch market. To support the anticipated sales growth our Client is seeking a Programmer aged mid-20's with several years COBOL (preferably mini or micro based) programming experience. Initially the successful candidate will be sent on an intensive all expenses paid Dutch language course and will then be expected to support the Company's ranged products from its West Netherlands base. Supplemental to an above average salary you will receive a car for business and personal use and assistance with initial accommodation expenses. Interested candidates should respond immediately as interviews will take place by the end of this month. Ref: L/7/05/B

MIS Manager Thames Valley

Salary: c£10K

Applications are invited from candidates aged 28—35 years who are currently working with mini-computers either in the role of Project Manager or Systems Consultant. Our client does not attach any particular significance to specialised hardware or software involvement but it is an absolute requirement to have very recent or current application experience in the areas of stock/inventory control, on-line order processing systems or warehouse automation projects. The successful person, based in the Thames Valley, will be required to travel extensively within E.E.C. especially Germany and Netherlands. Spoken language ability in German or French is a decided advantage but not essential. We will be drawing up a short-list for interview by the end of this month so early applications are recommended. Ref: L/7/05/C

U.S. Insurance Group City of London

Salaries £6.3K — £8K

A major American owned Insurance Group with total worldwide assets of £750 million will pay above average salaries for top-calibre personnel to work within its expanding Management Services Unit. The U.K. head office has recently ordered an IBM 3031 to supplant an existing 370/148 operating under DOS/CICS/VS. Systems Analysts, Applications and Systems Programmers with DOS/VS Assembler or COBOL and possibly some T.P. experience will be offered an excellent working environment at top salaries working in the Life Assurance, Motor Insurance and Re-Insurance Teams. Successful candidates will therefore be working on projects in the early stages of development so you are sure to expand your threshold of knowledge. In addition, our client offers free Life Assurance, Insurance Discounts, low rate Contributory Pension Scheme, free B.U.P.A., subsidised restaurant and flexible working hours. Interviews will be held on the company's premises throughout June. Ref: L/7/05/D

Database Specialists London and E.E.C.

U.K. £7—9K, E.E.C. £12—15K

Our international client has openings in London and the E.E.C. for Senior Database Administrators; Designers and Applications personnel with extensive Database experience on major main-frame and mini systems. Of particular interest are persons with expertise in IMS, Total, Adabas, DBMS, IDMS etc. More important than the actual hardware experience is an in depth knowledge of your relevant area of Database expertise. Our client is anxious to maintain its prestigious standing worldwide by attracting proven and potential talent to join them in the development of advanced Database projects in commercial and technical environments. The opportunity to travel within Europe and the U.K. is available. Those who offer spoken language ability in French and German are especially welcome and the salaries paid will reflect this particular ability. Interviews will be held in London throughout June. Ref: L/7/05/E

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London W1N 9HA

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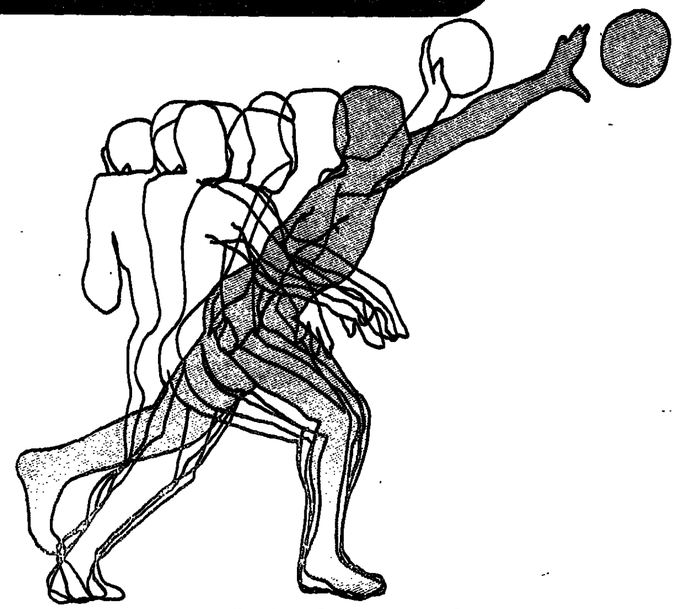
01-491 4636 LOGISTIX **Telex: 28800**

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611
9 a.m.-9 p.m. FRI.-WEDS.
(June 8, 11, 12, 13)



Let yourself be drawn into the world of interactive graphic systems

An exciting opportunity has arisen for computer service engineers in

LONDON S. YORKS. SCOTLAND

Our client is already a leading name in the computer industry and is now looking for experienced engineers to spearhead the rise in their rapidly expanding interactive computer graphics division. This rare opportunity to join a new division in the early stages of its growth affords excellent and exciting prospects for future advancement.

Working from home initially you will be part of a small team maintaining interactive graphic systems comprising a minicomputer with the usual computer peripheral and graphic terminals. A good basic training in electronic engineering is essential and previous experience of graphic systems and V7.7 hardware and software is desirable. However, in depth training will be given.

Salary scale of £6K to £8K p.a., depending on location and ability, + company car will be provided. In addition, there are big company benefits and rapid career progression within a dynamic environment.

So don't delay, ring Alan Slater or Peter Gorton, 9 a.m.-9 p.m.

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

KNIGHT PROGRAMMING SUPPORT LIMITED

CURRENT CONTRACTS

PDP11 RSTS DIBOL PROGRAMMERS ..... c£NEG
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GEC 4080 PROGRAMMERS ..... c£NEG
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RING PERRY BUTLER or JUDY LEES ON 061-833 9341/5

143/144 ROYAL EXCHANGE MANCHESTER
TELEPHONE NO. 061-833 9341/5

Computing Services Association

Programmers and Analysts

Working in Amsterdam has all the benefits of working abroad and none of the disadvantages

The advantages and disadvantages of working abroad are well known. In favour you have high salaries, good career prospects and no liability to UK tax.
Against you have the language problem, housing and schooling for the family and the time and cost of travelling home.
But our clients offer you a package that provides the best of both worlds.
They offer Systems Analysts and Programmers with a minimum of two years experience, free accommodation and travelling, generous assistance with schooling (there is a British Primary School in Amsterdam and, as they are based in Amsterdam where English is widely spoken, there is no language barrier and you are only an hour's flight away from England.
Salaries will be

Programmers
£7,000-£10,000 pa

Systems Analysts
£10,000-£13,000 pa

and as a highly successful multi-national company they offer involvement on an exciting range of development projects utilising IBM equipment.
The appointments will be on a two year renewable contract basis so why not make Amsterdam your home from home.
In the first instance, please write quoting ref: /231, with full career details, and listing any companies to whom you do not wish your application forwarded, to: Peter Phillips, Riley Advertising Limited, Old Court House, Old Court Place, Kensington, London W8 4PD.

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1900 COBOL CIRCA £230 p.w. 01-262 2251

COBAL PROGRAMMER
Any Machine
£6.5K + car allowance (perm)
or
£200 per wk. (min. 1 yrs' contract)
Call Ian Cox on 01-278 6426 (day) or 01-272 2794 (eves and w'n)
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Contracts Personnel
16, Bedford Row, London WC1R 4EB

Contract periods from 6 mths. to 3 yrs.

PDP 11 RSX 11 Systems & Programming Scientific, Technical, Software	£420
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IBM Internals Systems Programmers	£Neg
Intel 8085/86 Software Design & Programming	c£400
PDP11 RSX 11 Analyst Programmers—Commercial	c£350
PL1 — 6 mths. + Experience Programming	£250+
TC 800 Analyst Programmers -- Commercial	c£350
U118 Exc. Software develop and programming	c£375

from £220
Analyst and Programmers are also required for various commercial assignments in the U.K.

For further details, please contact Roger Allington, quoting ref. FL2/CW. If more convenient please call Berkhamsted (04427) 2299 evenings/weekends

01-242 9356

PROGRAMMERS
Barratt Shoes of Northampton have the following vacancies in their D.P. Department.

CHIEF PROGRAMMER
Suitable for a Senior Programmer with five years' experience of COBOL and PLAN. It is envisaged that suitable candidates will currently not be earning less than £8000

ANALYST/PROGRAMMER
Minimum 2 years' experience of COBOL plus the ability to work on their own initiative are the requisites for this appointment
The current configuration is a 48K 1901T with tapes and discs.
Northampton and the surrounding environment is a pleasant area in which to reside. Housing is reasonably priced and financial assistance will be given with relocation expenses.
Salaries for both positions are negotiable, will be based on experience and certainly above average.
To find out more, call us on Northampton (0604) 715500, or write to:
Mr DAVIES
STYLO BARRATT SHOES LIMITED — BARRATT DIVISION
FOOTSHAPE WORKS, NORTHAMPTON NN2 6EL

ANALYST/PROGRAMMER
(SCIENTITIC)
The Institution of Chemical Engineers requires an analyst programmer for its Physical Property Data Service, a computerised data base for chemical engineering design, which is marketed worldwide.
The person appointed would be required to design and implement user-oriented packages and interfaces on a variety of different mainframes.
Candidates should be self-motivating and have a thorough knowledge of FORTRAN, be familiar with different operating systems and possibly have a scientific background.
Salary will be dependent on age, qualifications and experience, probably in the range £4000-£6500 p.a.
Apply to:
Dr B. Edmonds
The Institution of Chemical Engineers
165-171 Railway Terrace
Rugby CV21 3HQ
Tel: (0788) 78214

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611
9 a.m.-9 p.m. FRI.-WEDS.
(June 8, 11, 12, 13)

We didn't get where we are today by being one step behind everyone else

-our products and people prove it

AES/Wordplex is a market leader in advanced computer based wordprocessing systems. They have achieved this position by not only having an excellent product range, but by also utilising "up-to-the-minute" promotional techniques including television advertising, combined with an aggressive marketing policy.

The present AES/Wordplex team, now well over 200 strong, is made up of young professionals selected from all over the computer industry.

They have one thing in common — they are all successful.

If you feel that you would fit into one of the following three areas and can cope with ***rapid career development*** in one of Britain's fastest emerging companies, ***we want to hear from you.***

SALES PEOPLE
London, Home Counties, Birmingham, Leeds

So you're a success, but is your company?

Do they offer you the No. 1 product in its field?

Do they understand the necessity of first-class support and provide it?

Do they provide the innovative marketing support to professionally promote the product and the company?

Do they pay you what you're worth?

AES/Wordplex does all this, and more.

Remember, success breeds success.

Contact Faye Ogilvie 9.30 a.m.-9 p.m.

FIELD SERVICE ENGINEERS
London, Home Counties and the Midlands

Mini computer or key to disc engineers ideally with experience of floppy disc systems motorola 6800/Intel 8080 micro chips.

Contact Peter Gorton 9 a.m.-9 p.m.

AES Wordplex offers all its employees:
★ 4 weeks' holiday
★ Free BUPA
★ Free Life Assurance
and for the above positions, company cars

SUPPORT ANALYSTS
London, Home Counties, Manchester, Scotland

Systems Analysts are required to support and assist the sales force, by the design and presentation of technical proposals to individual clients.

You will preferably have experience in mini computers and a knowledge of O&M techniques or communications, and the ability to work in a pre- and post-sales environment.

Contact Tony McGrath 9 a.m.-9 p.m.

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

MYER

AUSTRALIAN COMPUTER OPPORTUNITIES

THE MYER EMPORIUM LTD. Australia's largest Department Store Group and one of the World's largest retailing organisations have commenced what is the most exciting and significant Data Processing project in Australia today. It is envisaged that a new NATIONAL COMMUNICATIONS NETWORK, incorporating the Point of Sale, will be developed needing the latest "State of the Art" technology. A study has been initiated to establish the requirements of the new System, the STRATEGIC DESIGN and the STRATEGIC PLAN.

Several key people are needed NOW to participate in the study and then take part in the design, development and implementation. Location will be at the Corporate Head Office of Myer in Melbourne. Currently Myer operate a mix of IBM mainframes and NCR/POS terminals across Australia.

COMPANY INFORMATION:
The Myer Emporium was established in 1905 and currently employs 29,000 people in 122 stores and locations. The company is comprised of four profit centres

- Myer Department Stores
- Target Australia mass merchandising division
- Target Supermarkets food chain
- Myer Shopping Centres Property development division

Their revenue for 1978 was $US1.31 billion with planned annual revenue increases hence the need to greatly increase their Information Processing capabilities

ABOUT MELBOURNE, AUSTRALIA:
Melbourne is the second largest capital city in Australia renowned for its sophistication, corporate headquarters, superb restaurants, cultural centre and also being the capital of Australian football. It is built on a beautiful bay offering superb boating

Positions Available

SYSTEMS DEVELOPMENT MANAGER
Reporting directly to the Manager of Corporate Information Services. The successful person will plan, lead and control a large team (around 80) D.P. professionals. It is expected the person will have a minimum of 12 years D.P. experience and currently be in a senior position

Because of the scope of the project a complete understanding of Systems Development Methodology will be needed together with current knowledge of Data Communications and Data Base design. A successful Management record is a pre-requisite, considering the importance of the Development to the MYER Group of companies. Retail and translocation experience would make the person ideal

Remuneration will be by way of a package comprising a salary, company car, executive benefits and it is thought that $US60,000 should be taken as a guide. All relocation costs will be paid to Melbourne

TECHNICAL SERVICES MANAGER
This position also reports directly to the Manager of Corporate Information Services. This is a unique opportunity for a person with experience and a sound working knowledge of Network Engineering, Hardware and Systems Software Support and Maintenance, Research and Development, to obtain the type of career position that many only dream about.

The successful appointee must take full responsibility for designing and implementing a Nation-wide mixed supplier Data Communications Network, plus Design/Evaluation/Selection of Systems Software.

An exciting function of this position will be the Research and Development of new Hardware and Software announcements in order to appreciate the impact of the Strategic Design. Apart from a high technical capability a strong management track record is essential. Knowledge of MVS and IMS will be imperative.

Remuneration will be by way of a generous salary plus a company car and executive benefits, but $US45,000 should be taken as a guide. Relocation costs will be paid to Melbourne

DATA BASE SPECIALIST
The Myer Information Services Group also need people who have designed, developed and implemented substantial IMS Data-Bases. These people will take primary roles in Designing, Developing and Implementing the Myer Data-Base. The opportunity offered here is unparalleled in Australia.

Remuneration will be by way of a generous salary plus executive benefits, however $US33,000 should be taken as a guide.

PROJECT TEAMS
As the strategic plan is developed a large number of D.P. professionals will be offered, technically and financially rewarding career positions as Analysts, Programmers, Network Engineers, On-Line Specialists etc. If you have in excess of five years recent practical experience with Retail and Commercial applications, On-line/D.B. commercial applications, IMS-MVS-OS/VS II Systems Software then you should apply now.

ACTION
Battles and Associated of Sydney, Recruitment Consultants since 1971, have been appointed International Search Consultants for the Myer Emporium.

The Joint Managing Director of Battles and Associates, Kevin D. Howard, will be in London from the 24th to 28th June. He will be staying at the Churchill Hotel (telephone (01) 486 5800), and welcomes calls from those people who are genuinely interested and have the experience and a true desire to emigrate to Australia

All written replies should be directed as quickly as possible to:

Kevin D. Howard
BATTLES AND ASSOCIATES
c/- Institute of Directors
116 Pall Mall
London SW1

BATTLES

ADDS (UK) LTD
A subsidiary of Applied Digital Data Systems Inc.

Software Support Managers
UK or Europe
+
Software Analyst

A 'Ground Floor' opportunity in Micro-Based Systems

Applied Digital Data Systems (ADDS) is one of the world's leading suppliers of micro-processor based, small business systems and the largest independent manufacturer of display terminals. A European operation is already well established and the company is now involved in a campaign of considerable expansion via a network of OEM distributors and large-scale end users.

A key element of this planned growth is the appointment of two software specialists operating in the UK based on

London & Manchester

and the appointment of a further specialist also based on London operating throughout

Europe

Each software specialist will be responsible for providing systems and applications software support for the Regent 300 and ADDS System 75 in the context of both end user and sales support.

It is anticipated that the successful candidates will have good experience of applications software related to small business systems and preferably have relevant experience of floppy and/or fixed disk systems, Basic, Assembler and operating software. Knowledge of data communications would be desirable.

Salaries for these positions will range from

£5,500-£8,500 + Car/Car Allowance

plus business expenses where relevant.

Please contact Bernard Conn or Caroline Connabeer quoting reference number ADD061

SMR Sales & Marketing Recruiters Ltd.,
Victory House, 99 Regent Street,
London W1R 7HB.
Telephone: 01-734 9776.

Systems Programmers — all levels

In order to develop our next generation of micro-computer based terminals we need innovative Programmers who are looking for an opportunity of applying their abilities to the design and development of complete systems.

Those abilities should include the capability of taking a product from initial concept through design and development into production.

Specifically, you will be involved on all of the following:

- ★ Operating Systems
- ★ Interpreters
- ★ User Interfaces
- ★ Maintenance and Diagnostic Routines

Previous experience in any of the above would be useful but not essential, enthusiasm, being the most important factor.

We are looking for Systems Programmers at all levels, from recent graduates to those with many years of experience who are looking for a new challenge.

Initially you will be based at Croydon although some travel will be necessary in order to fulfill your job responsibilities. Long term career opportunities exist both in the UK and overseas.

The compensation package will reflect the importance placed on these positions. Salary, in particular, will not inhibit selection of right persons.

Please write or call, Cliff Marks
Personnel Manager
Burroughs Machines Ltd.
512 Purley Way
Croydon, Surrey CR0 4NZ
Telephone 01-688 0355.

Burroughs

Leicestershire

ANALYST/ PROGRAMMER

— Real Time System —

Salary £4773-£5568 p.a.
(inclusive of pay supplement)

Can you apply yourself to:

- ★ Understanding our real-time Traffic Control System
- ★ Low-level language programming
- ★ Front line maintenance
- ★ Hardware/software interfacing
- ★ Liaison with Engineering staff

We offer:

- ★ Work in a small busy team
- ★ Interesting development projects
- ★ Attractive home prices in pleasant countryside
- ★ Financial assistance with relocation
- ★ Casual user car allowance

Application forms and further details from the County Engineer and Surveyor, County Hall, Glenfield, Leicester LE3 8RJ. Telephone Leicester (0533) 871313, Ext. 7422. Closing date: Friday, June 22, 1979, and interviews will be held on Wednesday, July 4, 1979.

Computer Operator/ Programmer

NATIONAL DOCK LABOUR BOARD

The business of a busy Pension Office dealing with members and pensioners throughout the Country is expanding and being transferred from its present accommodation in London to **NEW OFFICES AT KINGSTON HILL, KINGSTON-UPON-THAMES.** Arising from the move we are looking for a system 10 COMPUTER OPERATOR/PROGRAMMER for the writing of new programmes and the modification, maintenance and de-bugging of existing software covering a wide range of programs.

The successful applicant will also be required to undertake the supervision of operating the system.

Salary range £6,578-£7,009 p.a. including London Allowance.

Conditions of employment are good and include — Contributory Pension Scheme.
23 days' annual holiday (pro-rata for 1979).
8 additional days' leave related to the 8 days' public holidays.
40p Luncheon Vouchers.
Office hours 9 a.m.-5 p.m. Monday to Friday.

Occupation of the new premises is not expected to take place until July and in the interim period, the person appointed will be required to travel to the existing office at Albert Embankment which is a short walk from Vauxhall Stations. Travelling expenses will be paid to the successful applicant if he/she is resident in the Kingston Hill area.

For an application form please write to —
MRS. M. I. DIBBEN, Staff Officer,
NATIONAL DOCK LABOUR BOARD,
22/26 ALBERT EMBANKMENT, LONDON SE1 7TJ.
(TELE. NO. 01-735 7277 (Ext. 67).

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611
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The Company
A consultancy whose totally professional approach has earned them one of the highest reputations in the computer services industry.

Base salary £6½k Earnings £15k
Commission paid monthly
Guarantee period
No upper earnings limit
Company car scheme

ATTENTION SALES AND SALES SUPPORT PROFESSIONALS

Person
A gregarious personality with a good current knowledge of the computer industry organisation, structures and applications plus a background in systems, programming, consultancy or management.

Position
Reporting to the Marketing Manager, you will be responsible for account sales, developing existing clients and further expanding the already broad base of business. This involves travel to client sites so mobility is essential.

Contact Faye Ogilvie or Tony McGrath between 9 a.m. and 9 p.m.

SALES MANAGER 20K

Company
An Internationally renowned manufacturer and supplier of sophisticated visual display terminals whose success is based on over half a century's expertise and experience in the electronics field and whose product is regarded as the industry standard.

Candidate profile
You will be: An existing sales manager, or salesperson whose next step is management, with experience of the OEM Terminal/Peripheral market. As further expansion into Europe is planned, European marketing knowledge would be an advantage.
The position is based in the South East and commands a basic salary up to £10K plus incentive package and quality car.

Position
AS UK Sales Manager your responsibilities will include sales strategy/forecasting, the identification of market segments, resources for product promotion as well as the management and development of existing regional distributors both directly and through a small, professional, high performance sales team.

Contact Faye Ogilvie or Tony McGrath between 9 a.m. 9 p.m.

Suite 201/6 Albany House, 324 Regent Street, London W1R 5AA. 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

CREATIVE ANALYST

NEW FINANCIAL DATABASE

CITY **Up to £8000**

Would you like to help create a new top-level management system for the control of a famous multinational company's finances?

Our clients are to use the latest minicomputer and database techniques. Employment conditions are above average and career prospects are good.

If you have a creative attitude to the use of computer in finance and

- enjoy communicating with senior management.
- have upwards of three years' analysis experience, including financial systems
- have some database knowledge

then this could be the career opening you seek.

Ring us in confidence for an exploratory discussion, quoting ref. 152, or leave a message on our answering machine and we'll contact you.

EDP SYSTEMS LTD
52-53 Margaret Street, London W1N 7FF
Telephone 01.637 5796 (24 hours)

BROADEN YOUR HORIZONS!

TRAINING IN

EUROPE AND U.S.A.

SALES EXECUTIVES **£12,000**
Generous Basic Salary + 80% Quota Earnings Guarantee + Commission + Prestige Car + Extensive Training (U.K., U.S.A., Europe)

SYSTEMS SUPPORT EXECUTIVES **£7,000-£8,000+**
Prestige Car + Expenses + Bonus + Extensive Training (U.K., U.S.A., Europe)

Our client is one of the most respected Computer manufacturers in the World with over 20,000 installations and Group Sales Exceeding $1 Billion. They offer an Extensive Range of High Performance Systems including:

Small Business Systems
Real Time Minis
Distributed Processing Networks
Terminals etc.

Supported from 9 Separate locations
with ..... 2 Customer Training Centres
and ..... Further locations currently being planned

Currently all their Salesforce is Exceeding Objectives and to maintain their growth rate in the U.K. they need to make further investment in PEOPLE . . . YOU! 1979 Development will take place throughout the U.K. from bases in **London, Birmingham, Manchester, Leeds, Edinburgh and Dublin.** (Some of these being future plans.)

In addition to all the above benefits you will enjoy:
Profit Sharing Scheme
Subsidised B.U.P.A.
Christmas Bonus
Non-Contrib. Pension Scheme

PLUS:—One of the Finest Sales/Product Training Schemes Available in the Industry Today!
So, if you have, or are looking for, Sales or Support experience and feel you are ready for the challenge of a **Stimulating Dynamic Environment** with REAL PROSPECTS for FUTURE MANAGEMENT then Call Now for Immediate Interview.
Ref. C.S. 1149.

ab executive (kingston) ltd
59 EDEN STREET, KINGSTON UPON THAMES, SURREY KT1 1BW
TELEPHONE: 01-549 6441-9

ARE YOU FRUSTRATED IN YOUR CURRENT POSITION?
JOB SATISFACTION?
SDI REMUNERATION?
LACK OF ADVANCEMENT?

THIS COULD BE JUST WHAT YOU'RE LOOKING FOR

SDI, the largest independent DOS, DOS/VS and soon DOS/VSE systems software company in the world has just formed a new group at its Development Centre near High Wycombe (Bucks), to provide Technical Services to the world-wide marketing organisation as well as internally to the Development teams.

If your current job does not offer you the satisfaction and challenges you desire then read on to see if you are the sort of person required for this new team.

The positions available are varied and will at times involve visits to customers in all countries in which SDI operates, as well as the provision of technical services to marketing companies and internally to the Development Centre. Initially, there are four positions available:

1. Technical Administrative Officer: who will provide technical and marketing assistance to the world-wide marketing organisation, as well as the creation and administration of various internal training schemes and procedures.
2. Product Assurance Controller: who will provide a new improved level of quality control procedures, external to the Development teams' current high standard.
3. Applications Programmer: who will design, document and write applications suites for internal use.
4. Technical Writer: who will be responsible for updating of current documentation and creation of internal and user documentation for new products using a computer based texting system.

Successful candidates will also have the opportunity to qualify as Product Specialists and thereby be involved in the launch of new products and features world-wide.

You will have the opportunity of joining a dedicated group of professionals who are currently working towards filling the gaps left by IBM's recent 4300 series announcement.

The remuneration package offered consists of:

Above average salary
A brand new building offering an excellent working environment
Relocation assistance where necessary
Life and disability insurance schemes
Pension scheme
Unlimited career growth opportunities

If you possess some or all of the following skills and abilities:

Are a bright self-starting individual able to get on with the job with minimum reference to superiors.
Consider yourself to have an excellent understanding of DOS/VS.
Have had some system programming experience.
Have had some applications programming experience
Consider yourself to have an excellent understanding of System/370.
Have had some experience with GRASP or GRASPVS (desirable but not a prerequisite).
Have had some operating experience (also desirable but not a prerequisite).

then why not give Robin Bailey a call on High Wycombe (0494) 20941 between 09.00 and 17.30 weekdays, to find out more, or write to:

SDI, PO Box 84, High Wycombe, Bucks.

CROYDON COLLEGE
Fairfield, Croydon, CR9 1DX

SCHOOL OF BUSINESS, MANAGEMENT & APPLIED SOCIAL STUDIES

LECTURER GRADE II
—COMPUTER STUDIES

Applications are invited for the above post, duties to commence 1st September, 1979.

This is an opportunity to join a newly-established Department and assist with the introduction of new courses to the College in Computing. Candidates must have a degree or a minimum of four years' computer experience and have experience of COBOL programming.

The salary for the above post is in accordance with the current Burnham Further Education Award, and is at present, Lecturer II, £4,428-£8,985 including the London Area Allowance. Additions to the scale may be made for appropriate qualifications and the point of entry is dependant on previous relevant experience.

Further details of this post and application form to be obtained from the Vice-Principal. The closing date for applications is 19th June, 1979.

£4000 - £7000+
North+Midlands
Analysts & Programmers
061-832-4184
(Thomson Division of Scicon)
Sampson Staff

SIEMENS

Technical Translators (German/English)

If you are a technically minded linguist or a linguistically gifted engineer or programmer, this could be your opportunity to take up a new, rewarding challenge in Southern Germany.

Our Language Services Department, based in Munich, has a number of openings for translators to work on English technical documentation in one of the following areas:

Data Processing (hardware and/or software)
Data Switching Systems
Semiconductors.

These positions are suitable for native English speakers with a sufficiently thorough knowledge of German to be able to clarify the technical content of the German source text in consultation with the engineering or programming staff.

Successful candidates will be offered all the benefits of a large international company, including excellent salaries and generous holidays.

Address your application to:
The Personnel Manager, SIEMENS LIMITED, Siemens House, Windmill Road, Sunbury-on-Thames, TW16 7HS.

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611
9 a.m.-9 p.m. FRI.-WEDS.
(June 8, 11, 12, 13)

SALES

Quota earnings to £12k + car

You must be a true professional with both technical and sales experience

A new company formed by an international computer group — leaders in: computing, communications management systems to launch an advanced intelligent terminal system

FLEXIBLE AND RELIABLE

Mini/Micro background, management ability, flair to identify new market areas

CONTACT: FAY OGILVIE OR TONY McGRATH
9 a.m. to 9 p.m.

a Rolls-Royce amongst computer systems . . .

intelligent terminals stand-alone/clustered tailored to meet exact demands of the user . . .

developed and manufactured in Britain . . . backed by massive human and software resources . . .

SALES

new Mini-computer Company

NORTHERN IRELAND

earnings not less than £12K + £1800 car allowance

This is your golden opportunity to get in on the ground floor of a new venture into N. Ireland.

Operating from their first-class offices with demonstration facilities based Belfast, you will be responsible for selling their mini-computer/word processor, with all the resources of a major company behind you.

You should have experience of the market in N. Ireland selling either mini-computers or bureau services and be prepared to undertake rapid career advancement, as for the right candidate progression into management is assured.

INTERVIEWS WILL BE HELD IN LONDON OR IRELAND

Contact Faye Ogilvie or Tony McGrath 9 a.m.-9 p.m.

Suite 201/6, Albany House, 324 Regent Street, London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

University of Birmingham

THE COMPUTER CENTRE

The Centre already provides a wide range of local and remote computing facilities to the University. These are now being further extended by the installation of a DEC 2050 interactive system for both teaching and research and by the development of an internal network which will have links into the Midland Universities Computing Network.

To help support these extended services applications are invited from graduates for the following posts:

COMPUTER OFFICER
Operations Group

to assist with the management of the DEC 20 installation, to provide technical hardware and software support in the area of telecommunications and overall involvement in the selection, design and construction of specialised hardware.

Candidates should have management ability and several years proven experience in the design of digital or telecommunications systems.

SENIOR HARDWARE ENGINEER
Operations Group

to be responsible for the day-to-day running of the technical workshop and the construction and maintenance of equipment associated with the network.

Candidates should have practical experience of telecommunications within a computer environment.

COMPUTER OFFICER
User Services Group

to participate in the work of the Group which is responsible for writing and supporting application packages and providing advice, instruction and documentation on the use of the Centre's facilities. Candidates should be sympathetic to the needs of novice users and preferably have expertise in

★ *statistical data processing* ★

ADVISER FOR INTERACTIVE COMPUTING

This new Computer Officer post has been created in the User Services Group to develop the practical application of

★ *CAI and CAL techniques* ★

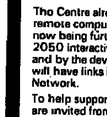
The post is tenable for two years: secondment would be welcome. Candidates should have computing experience especially in the areas of simulation and modelling techniques using on-line graphical displays.

For the Computer Officer posts, a higher degree is desirable but in all cases clear evidence of previous work successfully completed is essential.

STARTING SALARY FOR COMPUTER OFFICERS, ACCORDING TO AGE, QUALIFICATIONS AND EXPERIENCE, WILL BE ON THE SCALE: £3775-£6355 (BAR)-£7521 (from 1.10.78). AND FOR THE SENIOR HARDWARE ENGINEER ON THE OTHER RELATED 1A SCALE: £4333-£7521 (from 1.10.78).

Further particulars are available from the Assistant Registrar, Science and Engineering, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, to whom applications (3 copies) including curriculum vitae and naming three referees should be sent by Friday, 29th June, 1979.

Please quote reference CZ4.



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For further details please contact Andy Woodham or Graham Whittaker on Reading (0734) 581258 extension 36 or 46, reversing the charges. Or write to Andy Woodham, Operations Services, ICL Dataskil, Reading Bridge House, Reading, Berkshire RG1 8PN, quoting reference CW1405.

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We are looking for individuals with 2 + years IBM 370 programming experience (or equivalent) who would welcome the challenge and career development of living and working in America for 18-24 months with the possibility of participating in our international expansion on return.

To arrange an informal interview (expenses paid) on June 14 or 15, write enclosing your C.V. or telephone (reverse charges) Roger Barnes from midday, June 11 at:

SOFTWARE DESIGN ASSOCIATES, INC.
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Telephone: 01 262 6737

Database Staff for the Oil Industry

The British National Oil Corporation is currently embarking on major Database system developments in a number of application areas.

Several key posts now require to be filled by people with experience in Database design and implementation. These are challenging opportunities for D.P. professionals to become involved at the earliest stages in the development of an exciting range of applications on Hewlett Packard 3000 and large mainframe equipment.

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SENIOR PROGRAMMER/PROGRAMMER

but need not have previous experience of the oil industry.

If you have sound experience of Database development using a CODASYL based system such as IDMS, TOTAL or IMAGE/3000, these posts offer great potential for job fulfillment and personal career development.

If successful you will be offered a salary which fully reflects the importance of these positions. Other benefits will include an excellent pension scheme and generous relocation assistance where appropriate. Location is in Glasgow.

If you are interested in any of these positions please apply to:—
The Recruitment Officer,
The British National Oil Corporation,
150 St. Vincent Street, Glasgow G2 5LJ.
Telephone Number 041-204 2525.
The closing date for receipt of applications is 19th June 1979.

BNOC
The British National Oil Corporation

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Career Specialists and Consultants for
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Midlands, Northern Counties and Scotland
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★★★ If this will be you we're describing in 2 or 3 years time, why not get there with us — we would like to hear from you as well. ★★★

Please ring: MARION PEARSON on BOLTON (0204) 384112
or write to:
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Caroline House, 125 Bradshawgate
Bolton BL2 1BJ

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Senior Programmer (COBOL) Circa £7000+Bonus+B.U.P.A. Berkshire

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You will be working in a small team on a wide variety of commercial systems and will be expected to take an active part in all stages of systems development.

After 3 months, you can expect to be earning in excess of £7000, and you will also qualify for B.U.P.A., pension scheme, free life assurance and a bonus currently worth around £400 p.a.

For further details and to arrange a convenient time for interview, please telephone Mike Sutton or Nigel Pilkington on Colnbrook 4425 or 3346 between 10.00am & 4.00pm, or telephone Mike Sutton on Wokingham 786884 between 6.00pm & 9.00pm. Or if you prefer to write, send career details to Gloria Ezard, Personnel Officer, GAF (Great Britain) Limited, Blackthorne House, Blackthorne Road, Colnbrook, Slough, Berks.

GAF

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Principal: C. P. Gray, B.A., D.M.S., A.M.B.I.M.
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The School of Management Studies (part of the North West Regional Management Centre) has a well-established reputation both regionally and nationally in the fields of post-graduate and post-experience management education.

This is a senior appointment with major responsibilities. The division head will be required to lead a group of staff from several quantitative disciplines and to work closely with the School's other division heads. The person appointed will have general responsibility for the N.C.C. Basic Systems Analysis course and for the development of the computing content of all management studies courses in the School. He/she will also be expected to contribute to the development of computer studies in the College as a whole.

Candidates, who will be graduates, must have up-to-date knowledge of computer based information systems including microcomputers and hold or have recently held a senior position in business in this field. Teaching experience would be an advantage.

Salary: £7,047 to £8,844 (under review).

Application forms and further particulars are available from the Principal's Office, The St. Helens College of Technology, Water Street, St. Helens, Merseyside WA10 1PZ and should be completed and returned within fourteen days of the appearance of this advertisement. Please quote Ref. No. 1/CW.

Sir Frederick Snow & Partners
Consulting Engineers

COMPUTER PROGRAMMER

with Management Potential

We have the need for someone to co-ordinate and control our small computing section whose activities embrace both engineering and financial accounting applications.

The section has a staff of four and the equipment includes a Prime 300 Computer System and a PDP/11/20.

The post offers excellent opportunities for the use of initiative and leadership in a developing environment, and we believe it would be ideally suited to a programmer in his/her early 30s who has the potential to extend his/her career in a managerial role.

If this appointment is of interest please write giving details of your age, qualifications, experience and salary required to:

Melvyn Jones
(Staff Recruitment)
Sir Frederick Snow & Partners
Ross House
144 Southwark Street
LONDON SE1 0SZ

BRIGHTON POLYTECHNIC
DEPARTMENT OF COMPUTING AND CYBERNETICS

LECTURER II/ SENIOR LECTURER
(two posts)

(Post 1) in Computer Science with particular interest in Programming Languages.

(Post 2) in Computer Science with particular interest in Databases.

Salary Scales: Senior Lecturer £8051-£7572; Lecturer II £6101-£6688.

For further details and application forms, please apply to the Personnel Office, Brighton Polytechnic, Moulsecoomb, Brighton BN2 4GJ. Tel: (0273) 693655 ext. 2537/2167.

Closing date 15 June, 1979.

SHEFFIELD CITY POLYTECHNIC
Department of Computer Studies

RESEARCH STUDENT — DISTRIBUTED DATA BASES

Applications are invited from candidates who possess or expect to achieve an upper second class or first class Honours Degree in Computing to work on a research project of particular industrial relevance. The Department has an on-going project in the area of distributed data bases based on a number of microcomputers. The successful applicant will be required to seek registration for a CNAA research degree.

Requests for an application form in writing only please, to the Recruitment Section of the Personnel Department, Sheffield City Polytechnic, Pond Street, Sheffield S1 1WB, quoting reference 3/79. Closing date for receipt of applications 15 June, 1979.

NORTH EAST LONDON POLYTECHNIC

APPLICATIONS PROGRAMMER
AP.2/4—
BARKING PRECINCT

Required to assist a team of programmers in the Computer Centre engaged in the implementation of applications programmes over a very wide range. Considerable use is made of existing packages, new programmes, however, being written whenever justified.

The team also participates in an advisory service. Candidates should be experienced and possess academic qualifications to at least HND level. The inclusive annual salary ranges from £3584 to £4917 according to age, qualifications and experience.

For further details and application form please contact the Personnel Officer, North East London Polytechnic, 106 The Broadway, Stratford, E15 1NG. Telephone 555-8811, ext. 32. Quoting reference AP.2/4. Closing date: June 15, 1979.

Moulinex

ANALYST/PROGRAMMER
c £6,000 **Coulsdon, Surrey**

An Analyst/Programmer is required to complement a small development team working on order processing, accounting and stock control applications on an IBM System 3.

Plans are currently being made to install a new computer utilising both on-line processing and database software.

The successful applicant must be able to offer Analyst experience and a sound RPG II commercial programming background on an IBM System 3, as he/she will be involved with all aspects of the hardware conversion and will be expected to work with the minimum of supervision during design of future systems.

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SALARY £3675-£4578 inclusive of London Allowance

The Polytechnic in continuation with Intelligent Computer Systems is assisting a Short Course Centre for Microprocessor Training. A Technician Engineer is required urgently on a 1 year contract to support the teaching programme. College will provide digs.

Applications, forms and further details from the Personnel Officer, Polytechnic of North London, Prince of Wales Road, London NW5 3LB. Tel: 01-267 4422 ext. 2.

BRIGHTON POLYTECHNIC
COMPUTER CENTRE

The Centre provides an extensive multi-access and batch educational computing service currently based on ICL 1904A (128k), HP 3000 (2 × 64kb) and Harris 8/26 (336kb) computers and planning is about to start for major developments in the 1980s.

Applications are invited for the following vacancies:

1 SENIOR SYSTEMS OFFICER
(Hardware)
(£6191-£6858 and under review)

To undertake developments in the areas of microprocessors, data communications and hardware oriented solutions to service problems.

2 SYSTEMS PROGRAMMER
(£3795-£5073 or £5823-£6911 for Trainee)

To assist with systems programming support and development of the above and new systems.

Further details and application form may be obtained from the Personnel Officer, Brighton Polytechnic, Moulsecoomb, Brighton, BN2 4GJ, or by telephoning A. H. Watkinson or R. M. Bailey on (0273) 693655 / 2158 / 2167.

Closing date 15th June, 1979.

PROGRAMMER/ANALYSTS

Grade AP4 £4566-£4953 p.a. inclusive.

We are looking for a Programmer/Analyst with two to three years' experience in COBOL and FORTRAN interested in working on advanced management information systems and computer-aided design.

These systems are being developed on a range of machines, from mainframe, through time-sharing, to minis.

The person we are looking for should have relevant qualifications and be able to work with the minimum of supervision. Experience of data-base management systems would be an advantage but is not essential. The post will probably be attractive to a Programmer who wishes to move into Systems Analysis.

Flexitime worked.

Hillingdon is situated to the west of Greater London, borders on Bucks and Herts yet offers access to Central London. One-third of its 42 square miles is Green Belt.

Application form from the Personnel Officer quoting reference A/81/11
Civic Centre
Uxbridge, Middlesex
UB8 1UW
Telephone: Uxbridge 50888
Closing date: 22 June, 1979

LONDON BOROUGH OF HILLINGDON

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Our client is one of the leading UK international insurance brokers with worldwide operations, and part of a British multi-national group. The firm has been among the first in the insurance broking industry to introduce successful computer systems.

You would be part of a small team working in a stimulating environment. Your key task would be to develop an advanced MIS system with senior management. The scope of the job is wide: VDUs for data capture and information retrieval, word processors, O & M studies . . . Prospects for advancement are good.

To be considered you need experience of on-line systems and a background in programming in a high-level language. But above all your interest should be in the commercial application of computers and in management.

Your name will not go forward until you have been briefed and have given your consent. Please write to me as advisor to the group or telephone:

John Lee,
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26 Dorset Street,
London W1M 3FU.
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CHELSEA COLLEGE
University of London

SENIOR COMPUTER OPERATOR

A SENIOR COMPUTER OPERATOR is required to load one of two shifts in a small operations group in the College Computing Centre at Fulham Broadway

The Centre has just installed a Xerox 125 multi-access interactive computer under VULCAN. In addition operations covers an Elliott 4130 mainframe front-ended by a PDP11/40 to give multiple access interactive computing this machine will be phased out as the Xerox is upgraded. A data communications network, based on a Gandalf PACX unit couples remote users via terminals to the central computers

A responsible and well educated person is sought for this post preferably with a technical background and two years operating experience. A minimum of O level Mathematics and English is required

Conditions of appointment include a two-day week, four weeks' holiday, plus one week at both Christmas and Easter including the Bank Holidays, two shift working only, and a salary in the range £3956-£4662 inclusive

For further details and an informal interview contact Alastair Petrie or Richard Shepherd on 736 1244, or write to Computing Centre, Chelsea College, Pulton Place, London SW6 5PR

UNIVERSITY OF YORK
DEPARTMENT OF COMPUTER SCIENCE

RESEARCH ASSISTANTS

Applications are invited for two posts of Research Assistant to work on a project that will investigate the design of a time sharing operating system with a user interface similar to UNIX, to run on a number of microprocessors. The research is supported by the SRC distributed computing programme. Applicants should be experienced programmers, ideally in systems programming, with a sound knowledge of operating system design and construction. Familiarity with UNIX is desirable.

The posts are for a two-year period from 1 October 1979, with starting salaries in the range £3,775-£7,621 p.a. with superannuation.

Four copies of applications and curricula vitae should be sent by Friday, June 29, 1979 to the Registrar, University of York, Heslington, York, YO1 5DD, from whom further particulars may be obtained. Please quote reference number 13/7078

UNIVERSITY OF STIRLING
DEPARTMENT OF COMPUTING SCIENCE

TEMPORARY PART-TIME PROGRAMMING ASSISTANT

Applications are invited for the above post which will involve working 20 hours per week. Duties of the appointee will include maintenance and development of software for the Department's Computer and assistance to students. Experience with a PDP 11 would be an advantage.

Part time salary will be based on the full-time scale £3089-£6108 per annum

Further particulars are available from the Secretary (CW), University of Stirling, Stirling, FK9 4LA, to whom applications, together with the names of two referees, should be sent by 20 June, 1979. An appointment is hoped to be made by 1 October, 1979

London School of Economics

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The course is intended for people whose first degree includes Mathematics to first year university standard. There are two options within the course:
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Normal entry requirement: Upper Second Class Honours
Applications to: **Graduate Admissions, London School of Economics and Political Science, Houghton Street, London WC2 2AE by 22 June, 1979 at the latest.**

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We would expect applicants to have extensive experience in at least two of the following areas:

* **DATA COMMUNICATIONS**
  - NETWORKS
  - TERMINALS
  - ARCHITECTURE
  - IBM's SNA PRODUCTS
* **DISTRIBUTED PROCESSING**
* **MINI COMPUTER SYSTEMS**

A degree in engineering, mathematics, or computer science is desirable and proven success in several implementations is essential. It is likely that successful candidates would be aged 25+.
The rewards package is excellent including salaries rising to £12K, car allowance, and pension scheme.
For further information contact Valerie Morton, Personnel Officer, Sperry Univac, Sperry Univac Centre, Stonebridge Park, London NW10 8LS.
Tel: 01-965 0511. Ext. 3262.

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Part of your new found seniority will mean supervising Analysts, bringing out the best in them, managing the development and installation of systems and supervising on-site project implementation.

The job requires skill, initiative and intelligence but the rewards are high - salary up to £9000 p.a. plus company benefits. Promotion prospects are excellent - we would like to see you here one day as one of our Systems and Programming Project Managers in the near future.

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The successful applicant will be educated to 'A' Level standard and be proficient in ICL Hardware/Software, COBOL and RPGII. He will have a minimum of 2 years' experience in fiscal systems programming and design using tape and direct access data base techniques (Ref T007)

PROGRAMMER/ ANALYST

Educated to at least 'O' Level standard and with a minimum of 2 years' experience with COBOL, the successful applicant will be producing Micro and Modular programme flow charts. (Ref T008)

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A graduate with 3 years' experience in building computerised mathematical models and utilising statistical forecasting techniques (Ref T009)

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We're now looking for someone to join them: someone with experience on a high level language, preferably COBOL, — exposure to Neat 3 would be an asset — necessary to teach our programming, packages and operating systems.
With the added impetus of direct involvement in one of our most rapidly developing areas, your ambition for ever greater responsibility should find all the opportunity it needs for continual progression.
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Tel: 01-723 7070.

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Snamprogetti, international engineering contractors, require a Senior Data Controller/ Operator to control the submission to and the work output of a data 100 RJE link to an IBM 3033 in Milan. The duties include scheduling, trouble shooting and user liaison with other company departments.

Applicants should have had a number of years experience in operating an RJE terminal on a daily basis, together with a working knowledge of OS JCL. Further experience of JES 2 would be an advantage.

Very competitive negotiable salary together with paid overtime and flexible working hours

Applications to the **Personnel Manager, Snamprogetti Limited, Snamprogetti House, Basing View, Basingstoke, Hants. Telephone No. Basingstoke (0256) 61211.**

UNIVERSITY COLLEGE LONDON

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FOR LINKED COMPUTER SYSTEMS

required by the Computer Centre to join project teams developing software for a new service based on several linked GEC 4082 computers. This will replace the existing IBM 360/65 service and provide predominantly keyboard terminal access to a large number of staff and students.

The Centre is seeking experience and interest in the development of major sub-systems and the maintenance and enhancement of the OS4000 operating system. Salaries will be paid on the academic related scales £3717 to £6108 or £4261 to £7145, plus a London Allowance of £502. Suitably experienced candidates would be considered for the scale £6888 to £8452.

Applications including full curriculum vitae and the names of two referees should be sent to Computer Manager, University College, London, 19 Gordon Street, London, WC1

UNIVERSITY OF MANCHESTER

— LECTURERS IN COMPUTER SCIENCE

Applications are invited for the above posts from candidates possessing good Honours Degrees in Computer Science, or a related discipline, who have had research or industrial experience in, Systems Software, Information Processing, Applications or Industrial Applications. The successful candidates will be expected to undertake teaching at both undergraduate and postgraduate levels and to contribute to the Research of the Department into the design and performance of application orientated computer systems. Posts tenable from October 1st, 1979 or a date to be arranged. Initial salary within the range £4,232-£6,048 p.a. (£4,333-£6,199 p.a. from October 1st, 1979). Superannuation.
Further particulars and application forms (returnable by June 28th) from the Registrar, The University, Manchester M13 9PL. Quote ref. 127/79/CW.

UNIVERSITY OF YORK
Department of Psychology

COMPUTER TECHNICIAN

Applications are invited for the post of Senior Technician in the Department of Psychology at Grade 5 or 6. The post will involve work with the Department's minicomputers (mainly of the PDP 11 family), their interfacing to peripheral apparatus including oscilliscopes, printers, plotters and to T/o devices to be constructed in the Department's electronic workshop. The applicant should ideally have knowledge of both hardware and software

Salary in Grade 5 — £3,474-£4,066, at Grade 6 — £3,984-£4,786.

Applications in writing, giving the names and addresses of two referees, should be sent to the Deputy Bursar, University of York, Heslington, York, YO1 5DD. Further details are available from the Chief Technician, Mr Stevens, Tel: York (0904) 59861 ext. 5965. Closing date for applications is 20 June. [illegible]

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ANALYST/ PROGRAMMER

preferably with experience of the Adler & Jacquard range of equipment.

The person appointed will be required to work with a minimum of supervision and report to the directors. A certain amount of travel and customer relation will be included and a company car will be provided. An attractive salary and commission scheme will be offered commensurate with experience, we will also accept applications from trainees as expansion will create new vacancies in two to three months time.

Please apply in writing giving full details of qualifications and experience to:

Mr. I. S. Brown, Director,
HAVAN BUSINESS SYSTEMS LTD.,
Hatton Close, Moulton Park Industrial Estate,
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A new group has been formed to integrate Company products, and is responsible for the design and development of peripheral handlers, communication software and special compilers/interpreters, using a range of hardware.
Candidates should be flexible and self-motivated with a degree or equivalent qualification, and a minimum of three years varied software experience on mini-computers and/or microprocessors.
Considerable opportunity exists to broaden your experience and progress your career in a challenging environment.
For further information, please ring or write to Peter Brown, Manager, Computer Systems Interface Group, Instron Ltd., Coronation Road, High Wycombe, Bucks. Telephone High Wycombe (0494) 33333.
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Department of Electrical and Electronic Engineering

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A vacancy has arisen for this two-year appointment on a research project into the applications and use of special purpose associative databases. Special purpose hardware is being built and interfaced to a PDP-11 computer and applications are invited from any persons with research experience in the computer software or library science fields who wish to participate in this advanced project in state-of-the-art information systems. Applicants should possess a degree and research experience in the computer or library science field

Salary scale is expected to be £4333-£5199 with effect from 1st October, 1979.

Informal enquiries may be made to Dr. P. W. Foulk, telephone 031-225 8432, ext. 138. Application forms may be obtained from the Staff Officer, Heriot-Watt University, Chambers Street, Edinburgh, EH1 1HX. Ref. 33/79.

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To analyse, design, programme and test systems support and diagnostic software, including the Executive and VDU Programmes.
Responsible for the timely integration of the various simulated aircraft systems, resolving both communication and technical problems, maintaining standards and in general 'trouble shooting' software problems.
An engineer would normally be made responsible for the work above on a specific 18 months simulator project and would work as a member of a software team.
Applicants should be qualified to degree standard or by 4 years' related experience which should include simulator techniques.
Knowledge of high level languages desirable. ASSEMBLER essential.
Opportunities exist both at Head Office in Crawley and at our centre at Brighton.
Please write to or telephone John Perry, Personnel Manager – Recruitment, Redifon Simulation Ltd., Gatwick Road, Crawley, Sussex. Tel: Crawley (0293) 28811.

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redifon simulation
A member Company of the Redifusion Organisation

OXFORD UNIVERSITY COMPUTING SERVICE

The University has ICL 2980 and 1905A mainframe computers with a number of communications front end processors to provide batch, RJEC and RJE facilities. The following vacancies exist

SHIFT SUPERVISOR

to join the existing two supervisors in ensuring the smooth operation of the services.

TRAINING SUPERVISOR

This new post has been created primarily to ensure the adequate training of new operators. The person appointed will be expected to back up the activities of the shift supervisors.

For both positions candidates will be expected to have several years experience in computer work preferably at least one year of experience with VME/B or two years with ICL 2900 Series 2. Preferred age range 26-35.

Both posts are on a scale from £3,720-£4,205 per annum (under review), with a shift allowance of £622 p.a. for the Shift Supervisor post.

Further details and application forms, which should be returned by 20 June 1979, may be obtained from:

The Administrator
Oxford University Computing Service
13 Banbury Road
Oxford OX2 6NN. Tel: 0865 56721

Interviews will be held in the week beginning 2 July 1979.

CHELSEA COLLEGE
University of London

AN SSRC STUDENTSHIP

has been awarded to study for work with the Schools Council Project "Computers in the Curriculum." Applications for this studentship are invited to undertake research into one of the various aspects of this multi-disciplinary project. Possible topics could be: investigating the role of CAL in improving involvement with capital in numeracy; to investigate the impact of the widespread use of CAL and the ways it may prompt changes in the curriculum.

Further details of the project and the studentship are available from:

Dr. L. Laws
Computer Centre
Chelsea College
Pulton Place, London SW6 5PR

THE UNIVERSITY OF MANCHESTER

SENIOR LECTURER IN COMPUTER ENGINEERING IN THE DEPARTMENT OF COMPUTER SCIENCE

Applications are invited for this post which is available immediately. Candidates should have a good first degree and preferably a higher degree in Electronics Engineering or some related discipline and also considerable experience in one or more of the following fields: Integrated Circuit Design, Computer aided design of simple or systems, Microprocessor Design, Optoelectronic techniques, Memory elements, Interconnection techniques, High Density packaging and cooling of electronic systems. Preference will be given to candidates who wish to pursue research into aspects of computer aided design of electronic circuits and systems and who wish to develop and co-operate with others designing and constructing computer systems incorporating modern LSI technology. The appointment will be on the University scale for Lecturers, Grade A (£5,199-£6,048 per annum) or Lecturer, Grade B (£4,333-£5,199 per annum) according to qualifications and experience. The salary scales are under review and are expected to be increased by 10% with effect from 1st October 1979. Applications should be sent by 22nd June 1979 to the Registrar, The University, Manchester M13 9PL, quoting reference number 128/79/CW.

THE UNIVERSITY OF MANCHESTER
THE MANCHESTER MUSEUM

A PROGRAMMER

is required to implement (i) a BCPL compiler and (ii) the DDS (CAM) data handling package on the CONTROL DATA 7600 at the University of Manchester Regional Computer Centre.

The appointment, which is jointly funded by the North Western Museum and Art Gallery Service and the Manchester Museum, will be for one year only, at a salary within the range £4,333-£5,048 (i.e. preferred starting date July 1st, 1979). For further details write to The Director, Manchester Museum, The University, Manchester M13 9PL.

HELLA AUTOMOBILE EQUIPMENT LTD.
BANBURY, NORTH OXON

PROBLEM SOLVING PROGRAMMER

For an initial 12 month contract, we require the services of a PROGRAMMER, TRAINED IN ASSEMBLER LANGUAGE, to take responsibility for the running and development of the TEAMWORK (Assembly on 0295 53448/53446 or work for 73/74, High St. Banbury, OXON (Telex No 837A/37442)

Do more interesting projects always attract more interesting people?

If you're a programmer with anything from two years' experience upwards, come and talk to us. We'll quote chapter and verse of how your experience could give you more variety, more involvement and more responsibility than you've ever imagined for yourself.

At Software Sciences, we can justifiably claim to have more than an average share of interesting and challenging software projects.

For example, we're implementing the largest single turnkey project ever awarded to a UK Systems House. We in fact have over one hundred projects live at any time ranging across the commercial, scientific, government and defence fields. These include top-level consultancy assignments on most machines, demanding software production and a growing portfolio of turnkey assignments on a variety of minis and micros. All of these offer a unique breadth of exposure to different kinds of hardware, operating systems and languages which makes for a very special environment with the computer industry.

Also, we're handling advanced R & D work on compilers, programming tools and system development aids that will serve the computer industry for the next decade.

On our people side, our record is equally distinguished. It has, and always will be, our conscious policy to select men and women of exceptional ability, and to develop their ability through close involvement in a wide variety of work.

We'd like to meet some more talented individuals, and to offer them the rewards that a high degree of personal ability can command with us. The length and breadth of experience required varies with the individual needs of our project work – but the variety and scope of our projects allows for openings at all levels.

The one thing which all candidates should have is the desire to succeed and at Software Sciences you will be given the opportunity to do so. If you have this desire and the ability to rank with the Market's leaders, then a sensible step would be to talk with us about your future ambitions, initially by phoning SARAH CHAMBERS on the following number. Alternatively you may prefer to write to her at the address shown below.

Programmers
2 years+
Experience

£5500
£8500

Hampshire
Cheshire
Wiltshire

Software Sciences Limited
Abbey House, 282/292 Farnborough Road
Farnborough, Hants Telephone (0252) 44321

DEVON EDUCATION COMMITTEE
North Devon College

Principal G F Hird JP MA MBIM

Applications are invited for the post of

LECTURER GRADE I IN COMPUTER STUDIES, DATA PROCESSING AND STATISTICS

in the Department of Business Studies to date from September 1, 1979. The successful applicant will be required to teach these subjects mainly to BEC General and National Diploma/Certificate courses. Candidates must have a working knowledge of BASIC, COBOL and PL1 programming languages. Preferably applicants should have some experience of teaching and the post may be of interest to a candidate wishing to obtain a first post in education.

The present salary is £3,192 to £5,334, subject to review from 1st April 1979, with a commencing salary dependent on qualifications and industrial or teaching experience.

Further particulars and forms of application can be obtained from the Principal, Barnstaple, Devon.

UMIST

MULTI MICROPROCESSOR GRAPHICS RESEARCH

A vacancy exists in the Microprocessor Engineering Unit of the Department of Electrical Engineering and Electronics for a Research Assistant to work on a special purpose multiprocessor graphics system. The successful candidate will have experience in digital hardware design, experience with microcomputer or microprogrammable hardware, and preferably some programming experience. The objective of the research is to produce a high performance printed circuit board layout system which relies on dedicated hardware units to perform fast route searching.

Initial salary will be up to £5591 per annum and the appointment will be for two years in the first instance. The successful candidate may be able to register for a higher degree.

Write for an application form and further particulars, quoting reference EEE/98 to the Registrar, UMIST, P O Box 88, Manchester, M60 1QD, to whom they should be returned by the 6th July, 1979.

COBOL PROGRAMMING LECTURERS

Salary Negotiable

Vacancies exist for experienced Programmers to teach COBOL to students of Holborn Tutorial College.

A generous negotiable salary linked with other fringe benefits is offered.

Please write or telephone
Holborn Tutorial College
14 Adam & Eve Mews
High Street
Kensington
London, W.8
Telephone 01-937 9442

UNIVERSITY OF LONDON

SENIOR ASSISTANT LIBRARIAN — SYSTEMS ANALYST

Library Resources Co-ordinating Committee

A senior Assistant Librarian — Systems Analyst is required to develop, implement and maintain computerised housekeeping services for the Libraries of the University. Candidates should be experienced in library work or in the field of computing, with an interest in the application of computers to library management.

Salary in Grade IIB range of Senior Library Staff, £6,885 - £8,457 per annum (under review), plus £902 London Allowance.

Further particulars and application form obtainable from the Personnel Office, University of London, Senate House, Malet Street, London WC1 7HU. Tel. 01-636 8000, ext. 18. Closing date 22nd June, 1979.

BURROUGHS L9000 OPERATOR

Required for leading West London Auctioneers and Estate Agents based in W.12. Salary negotiable.

Please contact Willmotts, 01-743 4444. Ref. TMHM for further details.

Scientific Programmers/ Analysts

Scientific Computer Centre - Croydon

The Scientific Division of ISA-UK uses a DEC 2050 computer to provide a timesharing computing service to scientists and engineers within Philips Industries. There are currently vacancies for Scientific Programmers/Analysts in the following areas:

1. The support, promotion and maintenance of a large circuit analysis package used extensively within the Philips Group of companies. This will involve some travel, normally of short duration, both in the UK and to Europe.

2. To join a team providing support for several CAD/CAM packages. This includes applications for PCB layout, numerically controlled machine tools and general graphical devices.

Candidates should have a degree or equivalent qualification together with two years' FORTRAN experience preferably gained working in a large scientific project. Experience of DECIO, DEC 20 or IBM 370 software and CAD/CAM applications would also be an advantage. The ability to communicate clearly with other team members and users is of importance.

The salary will be of interest to applicants currently earning £5,000+ and benefits include 23 days holiday, pension scheme, staff purchase scheme and assistance with relocation where appropriate.

If you would like to discuss either position please telephone Dr. Sambles on 01-688 7766 extension 2574 or contact Valerie Apps, Divisional Personnel Officer, ISA-UK Personnel Department, City House, 420-430 London Road, Croydon, Surrey CR9 3QR, telephone 01-689 2166 extension 2034, for an application form.

PHILIPS Information Systems and Automation

PHILIPS

Turn Real Time Mini on for up to £10,000. Or more

Do it any time you like. Phone in the morning, afternoon, evening, 11 p.m., weekends even. The number is 01-836 9719. Failing that, 01-836 9882. Ask for Beryl. You'll get an answer. In the flesh — none of this answering machine stuff.

But do, please, be sure you're who we want to be turned on by. PROGRAMMER, PROGRAMMER/ANALYST, SYSTEMS DESIGNER or PROGRAMMER, SOFTWARE ENGINEER, PROJECT MANAGER or HARDWARE ENGINEER.

With at least a year's Real Time Mini or Micro experience, any configuration, Assembler and/or high level language.

DEC experience — especially using RSX11, RSTSE, Intel, Motorola Micro or Interdata 32 — is even more of a turn-on.

And a degree as well — computer science or other maths-orientated subject — could cause distinctly heavy breathing.

What do you get for all these answers to a maiden's prayer?

Not just money (see above). Also very interesting applications. **Commercial business systems, Customer support** — various roles, **Process control, Flight simulation, Micro processing, Word Processing, Communications** — tele and otherwise, **Message switching, Lecturing and training, Military systems, Automatic test systems.**

Locations. London, Home Counties and further afield — including E. Europe.

Ring Real Time Mini's 24-hour, personal answer hot line now — 01-836 9719 or 9882. Day or night, ask for Beryl McLaren.

Jupiter Computing Appointments (Recruitment) (REAL TIME MINI'S PLACE)

Jupiter Computer Appointments (Real Time Mini's Place) Suite 41/42, 12-13 Henrietta Street, London, WC2

DEPARTMENT OF MATHEMATICAL SCIENCES

Lecturer Grade II/ Senior Lecturer in Computing

(Data Processing and Systems Analysis)

Applications are invited from men or women, suitably experienced and qualified in the fields of data processing, commercial systems analysis and design.

Salary within the range £4101-£7065 (Bar)-£7572 p.a.

Application form and further details from the Assistant Director and Chief Administrative Officer, Trent Polytechnic, Burton Street, Nottingham. Forms to be returned as soon as possible.

TRENT POLYTECHNIC NOTTINGHAM

NCR COMPUTER OPERATORS

required at BENTALLS, the KINGSTON-based group of stores.

Working on our Criterion 8450, the successful applicant will have at least six months operating experience, preferably under B.3

Some evening shift work and occasional overtime will be involved.

Salary £3,750 excluding any shift allowance

Write or telephone the.

Group Personnel Controller
BENTALLS
Kingston-upon-Thames
01-546 1001, ext. 2110

Bentalls

Systems Analyst

Salary £5,553 to £6,663 (pay award pending)

Programmer

Commencing salary around £4,500 (pay award pending)

The Computer Section is responsible for developing and maintaining a variety of systems on the Council's 1902T installation with communications equipment.

WE SEEK

★ **ANALYSTS with**
- experience of investigation, design, specification and implementation of computer systems
- experience of ICL 1900
- suitable qualification
- local government experience

★ **PROGRAMMERS with**
- 18 months' experience in COBOL or PLAN
- experience of ICL 1900

WE OFFER

★ A salary of £5,553 to £6,663 p.a. inclusive for analysts
★ A starting salary of around £4,500 for programmers on a scale rising to £6,394 p.a. inclusive
★ Annual leave entitlement of up to 22 days plus 1 day's extra leave per month.
★ Pension scheme.
★ Work in an interesting variety of applications. Current developments include systems dealing with superannuation records and children boarded out with foster parents. Future developments will include systems for Libraries and Collection and Recovery of Rates.

Please contact John Allsop, Borough Treasurer's Department, 22-26 Clements Road, Ilford, IG1 1BD, telephone 01-478 3020, extension 309, for an application form.

Further details from Gerald Rosser, Senior Analyst, 01-478 3020, extension 124.

Redbridge London Borough

NEWSFLASH!
PROGRAMMERS, ANALYSTS
COBOL — RPG II — PL/1— ASSEMBLER
IBM — ICL — MINI'S
URGENTLY NEEDED!
Phone NOW
VIP Consultants
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VP

SITUATIONS WANTED

PROJECT MANAGER/ BUSINESS ANALYST

10 years experience in computer system studies industrial commercial and financial systems), and implementation bilingual English/German now resident near Vienna seeks challenging new appointment in W Europe
Box 1021, Computer Weekly

STAR JOB SPOT

JUNIOR OPERATORS
LONDON AND HOME COUNTIES

We now have a number of junior vacancies requiring from 6 months' experience on IBM or ICL computers. Vacancies exist in W.1, E. LONDON, HIGH WYCOMBE, MITCHAM and BROMLEY Promotion chances are good. CW23/1 Tricia

DATA CONTROL CLERKS

To £4,000 inc. **NR. CITY**

A major IBM OS installation in a multi-national organisation needs data control clerks to work a 2-shift system. A minimum of one year's experience required and JCL knowledge would be an advantage. The firm offers excellent working conditions, BUPA, CPS, subsidised restaurant, etc. CW23/2 Tricia

OPERATORS & SENIOR OPERATORS

To £5,000 inc. **S. HERTS**

If you have IBM OSVS1 experience, then apply now. Being one of the largest insurance companies in the country you will be well cared for. Non-CPS, 4 weeks' holiday and comprehensive sick pay scheme. CW23/2 Tricia

OPERATORS TO SHIFT LEADERS

£4,000 to £7,000 inc. **FELTHAM**

This professional Service Bureau certainly knows how to treat its staff! Excellent shift rates and a real chance for promotion. A minimum of 9 months' ICL Gll or Glll or 2900/VME experience is essential. Lovely perks include 21 days' hols, CPS, subsidised restaurant and BUPA scheme. CW23/4 Tricia

CUSTOMER SYSTEMS SUPPORT

c £6,500 + CAR **C. LONDON**

This major international terminal and mini manufacturer requires three first-rate Systems Analysts to advise, design and install a variety of Real Time applications based around Mini or O.E.M. Mainframe Computers. Excellent opportunity for advancement and top company perks. CW 23/5 Michael

FREELANCE PROGRAMMING VACANCIES

UK TO £300 PER WEEK

GEC	RPGII/Corel 66	Bucks	3 months+
ICL	DIL/Filelab	Herts	3 months
ICL	2980 TP VMEB	S. Coast	6 months
ICL	Sys. Ac.	Solihull	3 months
IBM	Cobol/DOS/CICS	London	3 months

OVERSEAS TO £450 PER WEEK

IBM	DOS/VSAM/PLI	Munich	1 year
SINGER	Sys. 10 Conv. 2980	Belgium	6 months
ICL	2904/Cobol German or Dutch ess.	Amsterdam	6 months
		Holland	3 months+
ASSEMBLER	Tele. Sys. exp.		

RING IRENE on 01-995 4148
FOR MORE VACANCIES

UCA Recruitment Consultants
UNIVERSAL COMPUTER ASSOCIATES LIMITED
01-995 3883 (01-958 6138 Evenings)
Data Express House, 3 Prospect Place, Heathfield Terrace, Chiswick W.4.

BE YOUR OWN BOSS

An exceptional opportunity is available to a limited number of experienced, competent and ambitious programmer/analysts or sales people throughout the U.K. who have some minicomputer and business applications experience.

If you feel you have the ability and strength of character to own your own business, but are handicapped by only having limited capital, then write to us now with full C.V. address and home telephone number. All replies will be dealt with in the strictest confidence.

If you qualify for this scheme, very substantial finance and management facilities will be placed at your disposal for only a nominal capital investment.

High fliers contact us now at Box 1027, Computer Weekly.

TYLIN PEOPLE

SHIFT LEADER

£5,400 incl. + Overtime + large company benefits

LIVERPOOL

Due to promotion, a unique opportunity exists for an experienced operator or programmer to take responsibility for the operating of an IBM System 3 shortly to be upgraded to a System 34. Potential career advancement is limited only to ability for he/she would be expected to participate in the installation of the new machine and assist in the design and implementation of a new VDU based system with particular responsibility for user department procedures.

Applicants should be educated to A-level standard and have the ability to communicate effectively with users. Experience of a small IBM installation would be an advantage but not essential as full training will be given.

Ref. CW23/2.

CONTRACT STAFF

Earn up to

£12,500 p.a.

TWO –	IBM 370 programmers DOS Cobol Experience of PLANCODE useful	CROYDON
FOUR	DEC PDP programmers Dibol	MANCHESTER
TWO	IBM 32/34/38 programmers RPG	LIVERPOOL
THREE	IBM 370 programmer Good assembler essential DOS or OS experience	KENT
TWO	DEC PDP programmers Dibol	CROYDON
	Operators All operating systems	VARIOUS

We have many other contract opportunities not only with external clients, but working in-house at one of our regional computer centres. Remember, your future lies with the sweetest company in the world, so phone today.

These are just a few of our current vacancies, for further details contact:

CHRIS TILLBROOK

TYLIN

A division of Tylin Management Systems Ltd., Leon House, High Street, Croydon CR9 3NH, Tel. 01-680 2323

A Member of the TATE & LYLE GROUP

Computing Services Association

SYSTEMS STAFF

for

MINI COMPUTER TURNKEY PROJECTS

to £7,500

Croydon & Merseyside

Due to increasing activities in the Turnkey field, an established computer services company — a subsidiary of an international Group — requires the following staff to form an additional project team:

1 Project Leader
2 Senior Programmer/Analysts
2 Leading Programmers

Applications are invited from programmers with two-six years' experience. Preference will be given to candidates with a knowledge of mini computers (IBM 32/34 or DEC PDP 11).

The company offers excellent working conditions and benefits which include four/five weeks' holiday, free or subsidised meals, non-contributory pension scheme, free life assurance, and preferential mortgage scheme.

Ref. CW23/1

SYSTEMS DEVELOPMENT, THE KEY TO OUR FUTURE.

Making systems really work for the business.

As a major international manufacturing company, we realise how vital new computer hardware and systems will be in the 1980's.

We know that our ability to compete successfully in the future depends on our present level of investment.

The first phase of this investment is almost complete, we are installing a powerful range of mini computers linked to an IBM 3031 mainframe. The IBM is already operational and the whole system will soon be going live.

Phase two could involve you.

Even more important than the hardware is the talent, experience and know-how behind it.

Currently we need to strengthen our teams with the following people:

Project Co-Ordinators
Senior Analysts
Analysts · Programmers
Operators

The range of appointments means your systems experience could be anything from 12 months to 12 years. Comprehensive experience in a manufacturing business but a limited systems background would also be acceptable.

We are offering a rare and exciting opportunity to make computers come alive in a manufacturing industry and we want to talk to men and women who can meet this challenge.

The nature of the projects means you will gain valuable experience in: database systems, distributed processing, on-line networking and process control of mechanical equipment. You will be providing vital initiative and guidance to the business, whilst enhancing your knowledge of the latest advanced technology.

What about the financial rewards? For Project Co-ordinators the starting salary is up to £7,000p.a. For the other positions the starting salary is up to £4,900p.a. We also operate a productivity bonus scheme which has provided substantial rewards. The many other benefits include a preferential car scheme.

Our location in the north west of England is convenient for major cities, the coast and superb countryside. Generous relocation expenses will be paid where appropriate.

So, if you would like to join a systems team with a vital role to play, write to Whites Recruitment Limited, with details of age, qualifications, career and salary progression to date, who will forward your application promptly.

R.D. Taylor, Regional Manager,

Whites Recruitment

Phoenix House, 45 Cross Street, Manchester M2 4JF.

Please quote Ref. No. 2204 and list the names of any organisation to whom your letter may not be sent.

COMPUTER OPPORTUNITIES IN YORKSHIRE

Here's a job for you as a
SYSTEMS ANALYST RN641. £5682-£6084 p.a. pay award pending.

You'll be based in Bradford so you can live within minutes of the beautiful Yorkshire Dales and National Park.

You'll be working with the latest equipment — our new 3M Byte I.C.L. 2970 running under VM E/B.

You'll be an important part of a project team helping to design, test and implement computer systems using your initiative, demonstrating your problem-solving communicative abilities.

If you've at least 3 years' experience in computers preferably with a programming background we'd like to hear from you.

Or how about a job as
COMMERCIAL PROGRAMMER RN 642 £4635-£4962 p.a. pay award pending.

Writing COBOL programs on our I.C.L. 2970.

You'll be working on a wide range of Commercial Projects.

It's a job with promotion opportunities either within programming or into software or systems depending on which path you wish to follow. You only need 2 years' experience — our excellent training facilities will soon develop your potential.

For either of these posts if you need to move we'll give you generous relocation expenses. You can also take advantage of bridging loan facilities and lodging allowances of make your move easier.

The authority has a good pension scheme.

Application forms are available from the Regional Personnel Officer, Yorkshire Water Authority, West Riding House, 67 Albion Street, Leeds LS1 5AA. Tel: Leeds 44 8201 Ext. 269).

To be returned by 18th June, 1979. Quoting the appropriate reference number.

Yorkshire Water

North Staffordshire Polytechnic, Computing Services Black Heath Lane, Stafford

New Programmer/Analyst opportunities with a major multi-processor computer system

Chief and Senior Programmer-Analysts required for system and network development with main frames, mini and micro systems.

Programmer-Analyst appointments are also available for suitably qualified personnel who may have graduated recently or have limited experience in systems network development and applications work.

The salary ranges:

Chief Systems Programmer-Analyst £5727-£6702 p.a. inclusive

Senior Systems Analyst, Programmer Analyst, Network programmer Analyst—£4773-£6668 p.a. inclusive.

Chief Applications Programmer-Analyst—£5232-£6342 p.a. inclusive

Programmer-Analysts—£2823-£5073 p.a. inclusive

Initial salary will be within these ranges depending on qualifications and experience.

Application forms and further particulars from the Establishment Officer, North Staffordshire Polytechnic, College Road, Stoke-on-Trent ST4 2DE.

ST. BARTHOLOMEW'S HOSPITAL
West Smithfield, London EC1A 7BE

Programmer

Applications are invited for a programmer to work in the section of Scientific Computing and Statistics in the Department of Medical Electronics. The work will involve a number of applications of multi-computers to a range of academic and clinical problems in the City & Hackney Health District. A degree and previous experience of Fortran programming are desirable.

Salary: £3,840-£4,829 p.a. inclusive.

For an application form please write to or phone the Personnel Department on 01-600 9000, Ext. 3320, quoting reference PTA/231.

MYRIAD

IBM OPERATOR

(2 shifts — NO NIGHTS)

NORTH-WEST LONDON **c £5000**

A very interesting operations position has now arisen with our client, a leading international manufacturing and marketing organisation based in North-West London.

The successful applicant will be able to offer at least two years' sound IBM System 3 or IBM 370 operations experience and will possess the ability to adapt quickly to a busy an stimulating environment.

Current hardware comprises twin IBM System 3/15's with extensive on-line systems, scheduled to be upgraded to an IBM System 38 within the next year. At present the installation operates a two-shift system covering the hours 7 a.m.-11 p.m., five days a week.

In addition to the very competitive starting salary, the company are able to offer all the usual benefits including a subsidised canteen and four weeks' holiday as well as a very good discount on company products.

Ref. NW1/0706/CW.

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 (24 HOURS)

Computing Services Association

NORTHERN OPPORTUNITIES

SYSTEMS ANALYST
YORKS. TO £7500

Our client requires a Systems Analyst to work on on-line commercial systems. DEC experience an advantage.
Ref. 1155

PROGRAMMER
LEEDS TO £6,000

A lucrative self-financing productivity payment is offered by our client who are currently installing new ICL equipment. Cobol experience required.
Ref. 1071

PROGRAMMER
NORTH TO £6500

A subsidised mortgage and relocation expenses. Cobol or Assembler experience with an IBM background would be considered ideal by our client.
Ref. 1023

PROGRAMMERS
TO £6200

Our client requires Programmers of all levels with Basic or Dibol experience to work on DEC equipment in various installations in Ireland.
Ref. 1158

PROGRAMMERS
TO £5200

Subsidised mortgage and relocation expenses are offered to successful applicants with IBM/Cobol experience.
Ref. 1139

PROGRAMMERS
LIVERPOOL TO £6000

A DEC installation requires Systems Programmers with experience of high level language and a good working knowledge of operating systems.
Ref. 1153

SYSTEMS PROGRAMMERS
TO £7,000

Systems Programmers are required to work on IBM equipment IMS OSVS or DOS VS experience required
Ref. 1150

SYSTEMS ANALYSTS
CHESHIRE TO £7,000

Our client offers a lucrative house purchase scheme to successful applicants with Univac experience. Now installation
Ref. 1021

ANALYST PROGRAMMERS
LANCS. TO £6000

Our clients require Analyst Programmers to supplement project team for expansion of work. Cobol experience required
Ref. 1065

SYSTEMS ANALYSTS
LANCS. TO £7000

Expanding company requires Analysts to work on IBM equipment in a pleasantly situated installation in the North-West
Ref. 1066

ANALYST PROGRAMMERS
YORKS. TO £6500

Analyst Programmers with ICL/Cobol experience are required by our client to work in installations across the North.
Ref. 1156

SYSTEMS ANALYSTS
LEEDS TO £6200

Relocation expenses/excellent bonus scheme. Our client is at present installing new ICL equipment and developing existing systems.
Ref. 1073

FOR DETAILS OF THESE AND OUR OTHER VACANCIES PLEASE CONTACT JOAN JOHNSTONE
143/4 ROYAL EXCHANGE BUILDINGS, MANCHESTER M2 ***061-833 9341/5 (24 HRS.)***
DATA PROCESSING RECRUITMENT SPECIALISTS

XOREN

Computer consultants & software specialists

REAL-TIME MINI SOFTWARE SPECIALISTS
£6,000-£9,000

Xoren Computing Ltd., is an independent UK based software house specialising in systems design and programming of real-time minicomputer and microcomputer systems.
The Company has experience of carrying out projects in the following fields:

BASIC SOFTWARE —	Operating Systems, Compilers, Linkers, Debug Packages, Text Editors, Device Drivers
COMMUNICATIONS —	Telephone Systems, Message Switching, Data Collection, Concentrators, Terminal Emulators
PROCESS CONTROL & TELEMETRY —	Pipeline Control, Alarm Monitoring, Automation Simulation, Materials Testing

The Company possesses its own PDP 11/34 computer which it uses as a base for software development.
Applicants should have a sound knowledge of real-time systems and experience of at least one mini-computer or micro computer. Please write to or telephone Mr. J. Jarvis.

Xoren Computing Ltd.
28 Maddox Street
London W1R 9PF
Telephone: 01-629 5932

LOUGHBOROUGH UNIVERSITY OF TECHNOLOGY

ENGINEER or SCIENTIST

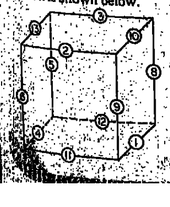
Applications are invited for a LECTURESHIP in the Department of Engineering Production from graduate engineers or scientists preferably with industrial and/or research experience, particularly in the manufacturing industries. The application of computer technology to production control, processes or manufacturing machinery are typical areas of interest.

Salary within scale £4232 to £8462. Further details and application form from Paul Johnson, Establishment Officer, ref. 79/19 EN.

Loughborough, Leicestershire

Puzzle Answer

If n equals the sum of the 12 numbers used, then 8x = 2n, and 6y = 2n. This means that n must be a multiple of 12, which leads immediately to 1 + 2 + 3 + 4 + 5 + 6 + 8 + 9 + 10 + 11 + 12 + 13 = 84. The basic distribution pattern is shown below.



THE UNIVERSITY OF LANCASTER
COMPUTER SERVICES DEPARTMENT

SYSTEMS PROGRAMMER

The department is to install an ICL 2960 in June 1979 to run initially under DME/GEORGE 3. The Systems Programmer will develop VME/K and/or 7906 software to effect a connection to the existing North West Universities' Network. A degree or equivalent qualification is necessary and a knowledge of large operating systems and/or communications would be an advantage, although graduates with experience as a computer user and with an interest in systems programming will be considered.
Salary, OR 1A (£4232-£7148 under review).
Further particulars may be obtained quoting reference L141A) from the Establishment Officer, University House, Bailrigg, Lancaster LA1 4YW to whom applications (five copies), naming three referees, should be sent not later than 30 June, 1979.

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DEPARTMENT OF MATHEMATICS AND SCIENCE

LECTURER GRADE I in MATHEMATICS and COMPUTING

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The Systems Programmers will assist in maintaining and developing the operating systems in the installation. They will have a keen interest in the technical aspects of computing. A degree in Computer Science or a similar qualification is desirable. The successful applicants will have experience of operating systems in an IBM (370) and or DEC (RSX 11M) environment.

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The Programmers will have a good experience of up to two years' duration. The main programming languages used are: COBOL, ASSEMBLER, FORTRAN IV plus. Experience in writing teleprocessing/real-time software will be an advantage.

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